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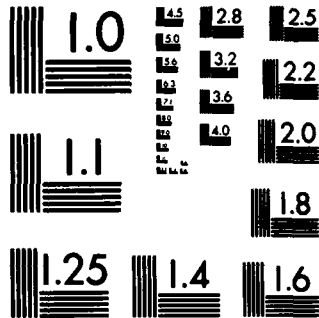
NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS
WINTONBURY DAM (CT 00.) (U) CORPS OF ENGINEERS WALTHAM
MA NEW ENGLAND DIV MAY 81

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AD-A144 571

CONNECTICUT RIVER BASIN
BLOOMFIELD, CONNECTICUT

WINTONBURY DAM CT 00494

PHASE I INSPECTION REPORT NATIONAL DAM INSPECTION PROGRAM

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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS. 02154

MAY 1981

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9. PERFORMING ORGANIZATION NAME AND ADDRESS		8. CONTRACT OR GRANT NUMBER(s)
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18. SUPPLEMENTARY NOTES Cover program reads: Phase I Inspection Report, National Dam Inspection Program; however, the official title of the program is: National Program for Inspection of Non-Federal Dams; use cover date for date of report.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) DAMS, INSPECTION, DAM SAFETY, Connecticut River Basin Bloomfield, Connecticut		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Wintonbury Dam consists of an earth embankment, approximately 1,625 ft. long, with a top width of 12 ft. and a maximum height of 23 ft. Based on visual inspection and review of available plans and reports, Wintonbury Dam is judged to be in good condition. The dam is classified as 'Intermediate' in size with 'High' hazard potential. A test flood equal to the PMF was selected.		



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF:

NEDED

JUL 01 1981

Honorable William A. O'Neill
Governor of the State of Connecticut
State Capitol
Hartford, Connecticut 06115

Dear Governor O'Neill:

Inclosed is a copy of the Wintonbury Dam (CT-00494) Phase I Inspection Report, prepared under the National Program for Inspection of Non-Federal Dams. This report is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. I approve the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is vitally important part.

Copies of this report have been forwarded to the Department of Environmental Protection, and to the owner, State of Connecticut, Department of Environmental Protection. Copies will be available to the public in thirty days.

I wish to thank you and the Department of Environmental Protection for your cooperation in this program.

Sincerely,

C. E. EDGAR, III
Colonel, Corps of Engineers
Commander and Division Engineer

Incl
As stated



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WINTONBURY DAM

CT 00494

CONNECTICUT RIVER BASIN

BLOOMFIELD, CONNECTICUT

PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT

IDENTIFICATION NO: CT-00494
NAME OF DAM: Wintonbury Dam
TOWN: Bloomfield
COUNTY AND STATE: Hartford County, Connecticut
STREAM: Beamans Brook
DATE OF INSPECTION: December 15, 1980

BRIEF ASSESSMENT

Wintonbury Dam consists of an earth embankment, approximately 1,625 ft. long, with a top width of 12 ft. and a maximum height of 23 ft.

The two outlets for the dam are the unregulated principal spillway and emergency spillway. The principal spillway consists of a two stage reinforced concrete intake riser discharging through a 30 inch, 145 ft. long reinforced concrete pipe under the dam embankment. The emergency spillway is a trapezoidal grassed channel 110 ft. wide at the control section with its crest 4.5 ft. below the top of the dam.

Based on visual inspection and review of available plans and reports, Wintonbury Dam is judged to be in good condition. Some features found existing that could affect the stability of the dam are wheel ruts on the crest and slopes, damage by burrowing animals, and sloughing and eroding of the east and west slopes of the downstream pool area. The dam is a flood control project and therefore the reservoir is dry except during periods of heavy rainfall. With the reservoir dry, the inspection could not reveal seepage conditions.

It is recommended that the owner arrange a qualified registered engineer to do the following within two years of receipt of this report:

Inspect the dam during the time that water is impounded in the reservoir with particular attention to locating any possible seepage;

Design slope protection for the sloughing and eroding slopes of the pool area of the downstream channel.

It is recommended that the owner repair the wheel ruts and minor erosion gullies on the dam embankment within two years of receipt of this report. Other remedial measures contained in Section 7 should also be carried out within a period of two years.

Based on the Corps of Engineers' "Recommended Guidelines for Safety Inspection of Dams", the dam is classified as 'Intermediate' in size with 'High' hazard potential. A test flood equal to the probable maximum flood (PMF) was selected in accordance with the Corps of Engineers' Guidelines. The calculated test flood inflow of 1,385 cfs results in a routed outflow of 1,070 cfs. The spillway capacity is 3,200 cfs with the water level at the top of the dam. The spillway is capable of passing 300 per cent of the routed test flood outflow without overtopping the dam. The storage capacity to the top of the dam is 1,750 ac.-ft. and up to the test flood level is 1,240 ac.-ft.

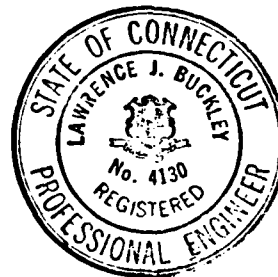
As the dam is a 'high' hazard potential and a potential breach may result in excessive economic loss and more than a few lives may be endangered, an emergency operation plan should

be prepared and implemented if and when necessary. An operation and maintenance manual to take care of normal routine procedures should also be prepared.

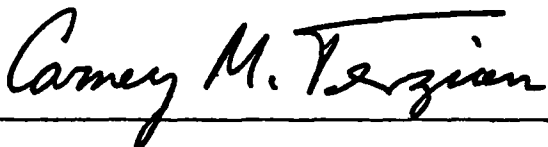
GOODKIND & O'DEA, INC.
AND
SINGHAL ASSOCIATES (J.V.)

R. P. Singhal
Ramesh P. Singhal, PH.D., P.E.
(Singhal Associates)

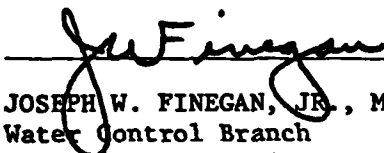
Lawrence J. Buckley
Lawrence J. Buckley, P.E.
(Goodkind & O'Dea, Inc.)



This Phase I Inspection Report on Wintonbury Dam (CT-00494) has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgement and practice, and is hereby submitted for approval.



CARNEY M. TERZIAN, MEMBER
Design Branch
Engineering Division

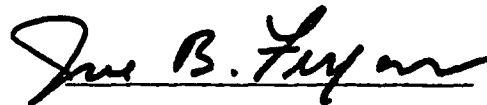


JOSEPH W. FINEGAN, JR., MEMBER
Water Control Branch
Engineering Division



ARAMAST MAHTESIAN, CHAIRMAN
Geotechnical Engineering Branch
Engineering Division

APPROVAL RECOMMENDED:



JOE B. FRYAR
Chief, Engineering Division

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the

condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I Inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test Flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

The Phase I Investigation does not include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety of the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

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NOTE:

OVERVIEW PHOTO TAKEN DECEMBER 20, 1980.

GOODKIND & O'DEA INC-- SINGHAL ASSOCIATES/LTD ENGINEERS		U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.	
NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS			
OVERVIEW PHOTO OF DAM			
WINTONBURY DAM BLOOMFIELD, CONNECTICUT			
DRAWN BY	CHECKED BY	APPROVED BY	SCALE: NONE
E.T.R.	W.J.W.	L.J.B.	DATE: MAY, 1981 SHEET 1

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT

PROJECT INFORMATION
Section 1

1.1 GENERAL

a. Authority

Public Law 92-367, August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a National Program of Dam Inspection throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. Goodkind & O'Dea Inc., Hamden, Conn. and Singhal Associates, Orange, Conn. (Joint Venture) have been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed were issued to Goodkind & O'Dea Inc. and Singhal Associates (J.V.) under a letter of December 9, 1980 from Colonel William E. Hodgson, Jr., Corps of Engineers. Contract No. DACW 33-81-C-0022 dated December 9, 1980 has been assigned by the Corps of Engineers for this work.

b. Purpose of Inspection

The purposes of the program are to:

1. Perform technical inspection and evaluation of non-federal dams to identify conditions requiring correction in a timely manner by non-federal interest.
2. Encourage and prepare the States to quickly initiate effective dam inspection programs for non-federal dams.

3. To update, verify and complete the National Inventory of Dams.

1.2 DESCRIPTION OF PROJECT

a. Location

The Wintonbury Dam is situated on the westerly branch of Beamans Brook which flows into the North Branch of the Park River, approximately 2.3 miles downstream of the dam. The location is approximately 1.2 miles northeast of the Bloomfield Town Hall and 0.5 miles northwest of the intersection of Filley Street and Wintonbury Avenue. The geographic location of the site may be found on the Hartford North Quadrangle Map, having coordinates of latitude N41° 50.6' and longitude W72° 43.5'.

b. Description of Dam and Appurtenant Structures

The Wintonbury Reservoir is impounded by Wintonbury Dam which is a grass covered earth embankment, 1,625 ft. long. The dam embankment has a top width of 12 ft. and upstream and downstream slopes of 3 horizontal to 1 vertical. The top of the dam is at an elevation of 116.5' Metropolitan District Commission Datum (MDC Datum) (2.08 ft. higher than NGVD) with a maximum height of 23 ft. A cutoff trench, 10 ft. wide and a minimum of 3 ft. deep is centered under the dam crest. A 12" thick gravel drainage blanket with a 6" perforated pipe underlies the downstream dam embankment. The drainage blanket extends to the toe of the downstream slope under most of the length of the dam.

The principal spillway consists of a two stage reinforced concrete intake riser discharging through a 30" reinforced concrete pipe under the dam embankment. The pipe is 145

ft. long and discharges into the downstream channel which is rip-rapped a distance of 16 ft. beyond the outlet. The low level inlet of the intake riser is at an invert elevation of 95.5 ft. (M.D.C. Datum) whereas the high level inlet weirs are at an elevation of 100.50 ft (M.D.C. Datum). The intake riser has trash racks at both the low level inlet and the high level inlet weirs.

The emergency spillway at the dam is a 110 ft. wide grass trapezoidal channel. The spillway crest elevation at the control section is 112.0 ft. (M.D.C. Datum), which is 4.5 ft. below the crest of the dam.

c. Size Classification: 'Intermediate'

According to the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams, a dam is classified 'Intermediate' if either its height lies between 40 ft. and 100 ft. or the storage is between 1,000 ac-ft. and 50,000 ac-ft. The Wintonbury Dam has a maximum height of only 23 ft. but the maximum storage (up to the top of the dam) is 1,750 ac-ft. As such it is classified as 'Intermediate' in size.

d. Hazard Classification: 'High'

Based on the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams, the hazard classification for Wintonbury Dam is 'High'. A dam failure analysis indicates that a breach of the dam would result in a downstream flood flow of approximately 95,000 cfs. causing a 20 ft. high wave of water to travel down Beamans Brook and along its overbanks on both sides. Continuation of the valley flood routing shows that even

at the 3rd cross-section, 2,500 ft. down from the dam, the excess flow and wave height are as high as 49,500 cfs and 18 ft. respectively.

The depth of flow in the brook in the area of 23 downstream houses considered (the last one being 2,500 ft. from the dam) range as below:

	<u>Pre-failure Depth</u>	<u>Post-failure Depth</u>
First 14 houses:	3.0 ft.	17.0 ft.
Next 9 houses:	4.2 ft.	18.0 ft.

None of these houses are subject to flooding under the test flood conditions. Under dam failure conditions they will be flooded to depths of 1 ft. to 4 ft. above their first floor elevations.

The dam failure would result in flooding of a large number of houses, public buildings, and several streets and important roads including State Routes 189 and 218. There is potential for 'excessive economic loss' and possible loss of more than a few lives.

e. Ownership

The Wintonbury Reservoir and Dam are owned by:

The State of Connecticut
Department of Environment Protection
State Office Building
165 Capitol Avenue
Hartford, Conn. 06115
Telephone: (203) 566-7244/7245

f. Operator

Mr. Victor Galgowski
Superintendent, Dam Maintenance
D.E.P. (Water Resources Unit)
165 Capitol Avenue
Hartford, Conn. 06115
Telephone: (203) 566-7245/7244

g. Purpose of Dam

The purpose of the dam is for flood control.

h. Design and Construction History

The dam and appurtenant structures were designed in the year 1960 by Anderson-Nichols, Consulting Engineers, under the direction of the U.S. Department of Agriculture, Soil Conservation Service. The dam construction was completed in 1963. The design report and construction plans including the as-built drawings are available at the U.S. Soil Conservation Service in Storrs, Connecticut.

i. Normal Operational Procedures

Wintonbury Reservoir is normally dry with no permanent pool. The normal operation and maintenance is limited to cutting grass and brush from the dam embankment and cleaning the trash racks at the principal spillway intake riser.

1.3 PERTINENT DATA

a. Drainage Area

The drainage area consists of 1.42 sq. mi. of gently sloping terrain, with average slope under 1%. Ground elevations range from a low of 100 ft. to a high of 180 ft. above M.S.L. Most of the area is inhabited and has several town roads and State Route 187 passing through it.

b. Discharge at Damsite

There are two spillway facilities at the damsite. The principal spillway is a drop inlet structure consisting of a two stage reinforced concrete intake riser and a 145 ft. long 30" reinforced concrete pipe under the dam embankment. The emergency spillway is a trapezoidal grassed channel 110 ft. wide at the control section and located at the southwest end of the dam.

- | | | |
|----|--|--|
| 1. | Outlet Works (conduits) size: | 1-30" R.C.P. |
| | Low level inlet invert elevation: | 95.5 |
| | High level weir inlet elevation: | 100.5 |
| | Discharge capacity at test flood elevation (114.1): | 59.0 cfs |
| 2. | Maximum known flood at damsite: | Unknown |
| 3. | Ungated spillway capacity at top of dam: | 3,200 cfs |
| | Elevation: | 116.5 |
| 4. | Ungated spillway capacity at test flood elevation: | 1,070 cfs |
| | Elevation: | 114.1 |
| 5. | Gated spillway capacity at normal pool elevation: | N/A |
| | Elevation: | |
| 6. | Gated spillway capacity at test flood elevation: | N/A |
| | Elevation: | |
| 7. | Total spillway capacity at test flood elevation: | 1,070 cfs |
| | Elevation: | 114.1 |
| 8. | Total project discharge at top of dam: | 3,200 cfs |
| | Elevation: | 116.5 |
| 9. | Total project discharge at test flood elevation: | 1,070 cfs |
| | Elevation: | 114.1 |
| c. | <u>Elevation-Feet above M.D.C. Datum (2.08 ft. higher than the N.G.V.D.)</u> | |
| 1. | Streambed at toe of dam: | 93.4 |
| 2. | Bottom of cutoff: | Varies |
| 3. | Maximum tailwater: | N/A |
| 4. | Normal pool: | N/A |
| 5. | Full flood control pool: | 112.0 |
| 6. | Spillway crest: | 112.0 (Emergency)
100.5 (Principal - High level weir inlet) |
| 7. | Design surcharge - original design: | 114.4 |
| 8. | Top of dam: | 116.5 |
| 9. | Test flood surcharge: | 114.1 |

d. Reservoir-Length in Feet

- | | |
|-------------------------|-----------|
| 1. Normal pool: | N/A |
| 2. Flood control pool: | 4,500 ft. |
| 3. Spillway Crest Pool: | |
| Emergency spillway | 4,500 ft. |
| Principal Spillway | |
| (High level weir inlet) | 1,000 ft. |
| 4. Top of dam: | 4,700 ft. |
| 5. Test flood pool: | 4,550 ft. |

e. Storage - Acre Feet

- | | |
|-------------------------|--------------|
| 1. Normal pool: | N/A |
| 2. Flood control pool: | 850 ac-ft. |
| 3. Spillway crest pool: | |
| Emergency spillway | 850 ac-ft. |
| Principal spillway | |
| (High level weir inlet) | 40 ac-ft. |
| 4. Top of dam: | 1,750 ac-ft. |
| 5. Test flood pool: | 1,240 ac-ft. |

f. Reservoir Surface - Acres

- | | |
|-------------------------|------------|
| 1. Normal pool: | N/A |
| 2. Flood control pool: | 165. acres |
| 3. Spillway crest pool: | |
| Emergency spillway | 165. acres |
| Principal spillway | |
| (High level weir inlet) | 10 acres |
| 4. Top of dam: | 250. acres |
| 5. Test flood pool | 202. acres |

g. Dam

- | | |
|-----------------|---|
| 1. Type: | Earth embankment |
| 2. Length: | 1,625 ft. |
| 3. Height: | 23.0 ft. |
| 4. Top width: | 12.0 ft. |
| 5. Side slopes: | 3 hor. to 1 vert. for
U/S and D/S slopes |

6. Zoning: None. The entire embankment made of compacted impervious fill.
7. Impervious core N/A
8. Cutoff: There is a 10 ft. wide cutoff trench with minimum depth 3.0 ft.
9. Grout Curtain: N/A
10. Other: 12" thick drainage blanket and a 6" perforated pipe seepage drain system.

h. Diversion and Regulating Tunnel N/A

i. Spillway

	<u>Principal Spillway</u>	<u>Emergency Spillway</u>
1. Type:	Drop inlet structure consisting of a two stage reinforced concrete intake riser with a 30" reinforced concrete pipe	Grassed Trapezoidal channel
2. Length of crest:	15 ft (High level inlet weirs)	110 ft. (at control section)
3. Crest elevation (M.D.C. Datum)		
w/flashboards:	N/A	N/A
wo/flashboards:	100.5 (High level inlet weirs)	112.0
4. Gates	N/A	N/A
5. Upstream channel:	Natural channel	N/A
6. Downstream channel	Relocated brook with 24 ft. length rip-rapped at outlet	N/A
7. General	N/A	N/A

j. Regulating Outlet

The only outlet is the unregulated principal spillway.
(See Section 1-3-i, page 1-8).

ENGINEERING DATA
Section 2

2.1 Design Data

A comprehensive design report prepared in 1960 and entitled "North Branch Park River Watershed Protection Project, Design Report, Site No. 1, Bloomfield, CT." is available. The design report includes hydrologic and hydraulic data and computations, soil borings, soil laboratory test data, dam stability analysis and seepage analysis.

2.2 Construction Data

"As-Built" drawings entitled "North Branch Park River Watershed Protection Project, Floodwater Retarding Structure, Site No. 1 Wintonbury Dam" are available. These drawings have been reviewed and found to show good agreement with the visual inspection. Certain details have been copied from the "As-Built" drawings provided by the U.S. Department of Agriculture, Soil Conservation Service, Storrs, Connecticut and are included in Appendix B.

2.3 Operational Data

Normally a pool does not exist and water level readings are not taken at any specified intervals. According to the owner, water levels have never risen to the level of the emergency spillway crest. No formal operation records are known to exist.

2.4 Evaluation of Data

a. Availability

Available existing data was provided by the State of Connecticut Department of Environmental Protection who are the

owners and the U.S. Soil Conservation Service who designed and constructed the dam. Location of the available data is given in Appendix B.

b. Adequacy

The engineering data available, when coupled with visual inspection, was generally adequate to perform an assessment of the dam.

c. Validity

A comparison of record data and visual observations reveals no significant discrepancies in the record data.

VISUAL INSPECTION
Section 3

3.1 Findings

a. General

The formal field inspection took place on December 15, 1980 by engineers from Goodkind & O'Dea, Inc. and Singhal Associates. Detailed checklists included in Appendix A, were utilized for the inspection of the dam and spillways. Photographs showing these features and problem areas were also taken during the visual inspection. A photo location plan is included in Appendix C along with the related photographs. The general condition of the project is good; however, the inspection did reveal some areas requiring maintenance and/or monitoring. The reservoir area was dry at the time of inspection.

b. Dam

The dam is a grass covered, earthfill embankment with a gravel drainage blanket underlying the downstream slope. The dam alignment was good with no sign of vertical or horizontal movement. Some vehicular rutting was observed along the crest of the dam embankment which was covered by a well developed, stable growth of grass (Photos 1 & 2). Evidence of vehicular rutting was also observed along the downstream toe and slope as shown in Photo 1. The embankment slopes of the dam appeared stable with no apparent erosion.

There was no evidence of any downstream embankment seepage; however the reservoir area was dry at the time of the inspection. The 6" seepage drain outlets could not be found

and, therefore, were not inspected.

c. Appurtenant Structures

Principal Spillway

The normal flow of Beamans Brook and the impounded stormwater runoff is carried through the dam embankment by the principal spillway which consists of a two stage reinforced concrete intake riser and a 30" reinforced concrete pipe. The intake riser and the 30" pipe were clean and in good condition with no apparent cracking or spalling of the concrete (Photos 4 & 5). As shown in Photos 3 and 4, the steel grate at the low level inlet of the intake riser and the grass-lined upstream channel were also clean and in good condition, as was the rip-rapped area immediately downstream of the spillway outlet.

Emergency Spillway

The general condition of the grass-lined emergency spillway, which is located at the southwest end of the dam, was good with no apparent erosion. Evidence of heavy vehicular rutting was observed along the southwest cut slope and channel floor, as shown in Photo 7.

The dike along the northeast side of the spillway was in good condition with some minor vehicular rutting along the crest, as can be seen in Photo 8. Two 4" diameter burrowing animal holes were observed in the dike, as shown on the general dam plan in Appendix B.

d. Reservoir Area

The reservoir area which was dry at the time of the inspection consists of open fields and wooded areas with a few residential homes on the fringe of the reservoir.

e. Downstream Channel

Downstream of the principal spillway outlet, the channel widens to a grass-lined pool. Sloughing and erosion were observed on the east and west slopes of the pool area, as shown in Photo 6. The channel downstream from the pool area was clean with stable grass-lined slopes.

3.2 Evaluation

Based upon the visual inspection, the general condition of the dam and spillways was good. The following features could influence the future condition and/or stability of the structure:

1. Continued vehicular traffic along the dam and emergency spillway could lead to erosion problems.
2. Further sloughing and erosion of the west slope of the downstream pool area may lead to erosion of the dike along the emergency spillway.
3. Increased animal burrowing in the dike along the emergency spillway may result in future deterioration of the dike.

The dam is a flood control project and, therefore, the reservoir is dry except during periods of heavy rainfall.

With the reservoir dry, the inspection could not reveal seepage conditions; thus, this inspection cannot in any way evaluate the seepage conditions that may exist when water is impounded in the reservoir.

OPERATIONAL AND MAINTENANCE PROCEDURES
Section 4

4.1 Operational Procedures

a. General

There are no operational procedures such as dam surveillance or reservoir level readings at this time. The spillways were designed to be uncontrolled and, therefore, would not have any operational procedures.

b. Description of any Warning System in Effect

There are no warning systems in effect.

4.2 Maintenance Procedures

a. General

The State of Connecticut is responsible for the maintenance of Wintonbury Dam. The dam embankment, reservoir area and emergency spillway are mowed biennially by the State; whereas, the upstream and downstream channels are annually cleaned and cleared of debris and brush.

Annually, representatives from the State of Connecticut Department of Environmental Protection and the U.S. Soil Conservation Service inspect Wintonbury Dam. A copy of the latest inspection report is included in Appendix B.

b. Operating Facilities

The State of Connecticut has charge of the construction, operation, and structural repair of the flood control works.

4.3 Evaluation

The operational and maintenance procedures are generally satisfactory but there are areas requiring improvement. A formal operational and maintenance procedure with continuing records and a formal downstream warning plan should be developed by the State of Connecticut Department of Environmental Protection. A list of recommended procedures for the operation and maintenance of the dam is given in Section 7.

EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES
Section 5

5.1 General

The Wintonbury Reservoir was created along with three others in Bloomfield, Connecticut, in the 1960's to reduce flooding potential in the watershed area of the North Branch of the Park River. Detailed designs were prepared by Anderson-Nichols, Consulting Engineers, under the direction of the U.S. Department of Agriculture, Soil Conservation Service.

The reservoir has a contributory drainage area of 1.42 square miles which is gently sloping with average slope under 1%. A good part of this area is developed with several Town roads and many houses and other buildings.

The Wintonbury Dam is a 1,625 ft. long earth embankment with a maximum height of 23 ft. It is made up of compacted impervious fill, and has a drainage blanket, seepage drain system and a cutoff trench.

There is a 30" outlet pipe under the dam and a two stage reinforced concrete intake riser upstream of the dam acting as the principal spillway and a trapezoidal grassed channel, 110 ft. wide at the control section, which serves as the emergency spillway. The combined spillway capacity is 3,200 cfs before overtopping of the dam occurs. The spillway capacity at the test flood elevation 114.1' MDC Datum is 1,070 cfs. The crest elevation of the dam is 116.5' MDC Datum which is 4.5 ft. higher than the emergency spillway crest elevation of 112.0' MDC Datum.

5.2 Design Data

Detailed plans, the as-built drawings and the design reports prepared by Anderson-Nichols, Consulting Engineers, are available at the U.S. Department of Agriculture, Soil Conservation Service, Storrs, Connecticut. Necessary design data is contained in these documents. The design test flood inflow for Wintonbury Dam was 5,670 cfs and the routed outflow was 1,060 cfs. The design high water elevation in the reservoir was set at 114.4' MDC Datum, giving a freeboard of 2.1 ft.

5.3 Experience Data

There are no known records of reservoir levels during the times that water has been impounded at Wintonbury Dam.

5.4 Test Flood Analysis

Based on the dam failure analysis, the dam is classified as being 'High' hazard potential in accordance with the Table 2, on page D-9 of the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams. The test flood should be equal to the probable maximum flood (PMF) which was accordingly adopted for analysis.

An inflow peak rate of runoff was calculated for 1.42 square miles of watershed area with the terrain being judged to be in the 'flat and coastal' category. The peak inflow rate of 975 cfs per square mile was read for the guide curves supplied by the Corps of Engineers, which gave the PMF as $975 \times 1.42 = 1,385$ cfs.

A triangular hydrograph was constructed using the methodology given in the 'Hydrology, Section 4, SCS National Engineering Handbook'. The peak inflow rate of 1,385 cfs and a total runoff of 19" for the PMF were used to construct the inflow hydrograph.

The flood was then routed through the reservoir assuming an initial water elevation of 112.0' MDC Datum which was at the crest of the emergency spillway control section. The test flood produced a maximum discharge of 1,070 cfs which is considerably less than the maximum spillway capacity of 3,200 cfs, which is 300% of the former. The peak test flood pool elevation of 114.1' MDC Datum results in a 2.4 ft. freeboard to the top of the dam.

5.5 Dam Failure Analysis

A dam failure analysis was made in accordance with the Corps of Engineers guidelines. Failure was assumed with the water level at the test flood elevation of 114.1' MDC Datum and a prefailure routed outflow of 1,070 cfs. Assuming a dam breach size of 650 ft. wide (40% of dam length) and 19.6 ft. high, the peak release rate would be 95,000 cfs to the downstream.

The height of the flood wave came out to be approximately 20 ft. at the first cross-section (Sta. 5+0). Three cross-sections were analyzed, the last one being 2,500 ft. downstream from the dam. Flood routing computations were done taking into consideration the available valley storage. The resulting flood elevations and the values of the routed flood flows are shown

in Appendix D. At the last cross-section (Sta. 25+0), the flow reduces to 49,500 cfs and the wave height to 18 ft. which still has considerable potential of causing substantial flooding of properties further down from Park Avenue. The depths of flow in the stream in the area of 23 downstream houses considered (the last one being 2,500 ft. from the dam) range as follows:

	<u>Pre-failure depth</u>	<u>Post-failure depth</u>
First 14 houses:	3.0 ft.	17.0 ft.
Next 9 houses:	4.2 ft.	18.0 ft.

None of these houses are subject to flooding under test flood conditions. Under dam failure conditions, they will be flooded to depths of 1 ft. to 4 ft. above their first floor elevation.

A large number of roads, houses and other buildings will be flooded as a result of the dam breach. The economic loss may be excessive and more than a few lives may be lost. As such, the Wintonbury Dam is classified as "high" hazard potential.

Dam breach calculations are included in Appendix D.

EVALUATION OF STRUCTURAL STABILITY
Section 6

6.1 Visual Observation

The visual inspection revealed no apparent structural stability problems. However, an area of concern was noted. The rutting on top of the dam embankment could result in future erosion problems. Water tends to accumulate at low spots in the ruts and flow down the embankment slopes in concentrated gullies.

The reservoir was dry at the time of inspection; therefore, any seepage that may exist when water is impounded in the reservoir, could not be observed.

6.2 Design and Construction Data

A review of the available data indicates that the dam was adequately designed for structural stability.

6.3 Post Construction Changes

The reinforced concrete intake riser was repaired in 1967 when scour pockets developed under the structure. A concrete footing was placed under the riser and a 30" ring closure unit was utilized to attach the 30" concrete water pipe to the intake riser. The available data does not indicate any other post construction changes.

6.4 Seismic Stability

The dam is located in Seismic Zone No. 1, and in accordance with Corps of Engineers' guidelines does not warrant further seismic analysis at this time.

ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES
Section 7

7.1 Project Assessment

a. Condition

Based upon the visual inspection of the site, review of available data and past performance, the project appears to be in good condition. No evidence of structural instability was observed. The dam is generally in good condition with areas of some concern which require maintenance and/or monitoring.

Any structural instability that might occur due to seepage when the reservoir contains floodwater could not be evaluated, since the reservoir was dry.

Based upon "Preliminary Guidance for Estimating Maximum Probable Discharge" dated March, 1978, peak inflow to the lake is 1,385 cfs ; peak outflow is 1,070 cfs with the water level 2.4 feet below the dam crest. Based upon our hydraulic computations, the spillway capacity with the pool level to the top of dam is 3,200 cfs , which is equivalent to approximately 300% of the routed test flood outflow.

b. Adequacy of Information

The information available is such that an assessment of the condition and stability of the project can be made.

c. Urgency

It is recommended that the measures presented in Section 7.2 and 7.3 be implemented within two years of the owner's receipt of this report.

7.2 Recommendations

It is recommended that the owner employ a qualified registered engineer to:

1. Inspect the dam during the time that water is impounded in the reservoir with particular attention to locating any possible seepage.
2. Design slope protection for the sloughing and eroding slopes of the pool area in the downstream channel.

The owner should implement the recommendations of the engineer.

7.3 Remedial Measures

a. Operation and Maintenance Procedures

The following measures should be undertaken within the time period indicated in Section 7.1.c., and continued on a regular basis.

1. Surveillance should be provided by the owner during periods of unusually heavy precipitation and high discharge. The owner should develop and implement a downstream warning system to be used in case of emergencies at the dam.
2. A formal program of operation and maintenance procedures should be instituted and fully documented to provide accurate records for future reference.
3. A comprehensive program of inspection by a registered professional engineer qualified in

dam inspection should be instituted on a biennial basis.

4. On the emergency spillway repair vehicle scars by reestablishing sod and vegetation cover.
5. Expose and clean out toe drain outlets, where required.
6. Fill in all animal burrow holes.
7. Fill in ruts on the dam embankment and reestablish sod and vegetation cover.

7.4 Alternatives

This study has identified no practical alternatives to the above recommendations.

APPENDIX A

INSPECTION CHECKLIST

VISUAL INSPECTION CHECK LIST
PARTY ORGANIZATION

PROJECT Wintonbury Dam

DATE 12/15/80

TIME Afternoon

WEATHER Sunny 20°

W.S. ELEV. _____ U.S. _____ D.M.S. _____

PARTY:

1. Ramesh P. Singhal (RS)
2. Ed Henderson (EH)
3. Wally J. Wolt (WW)
4. Gerald Buckley (GB)
5. _____

DISCIPLINE:

- Hydraulics
- Geotechnical
- Hydraulics
- Soils & Structures
- _____

PROJECT FEATURE

INSPECTED BY

- | | |
|---|-----------------------|
| 1. <u>Dam Embankment - Earthfill</u> | <u>RS, EH, WW, GB</u> |
| 2. <u>Principal Spillway - Intake Riser</u> | <u>RS, EH, WW, GB</u> |
| 3. <u>Principal Spillway - Outlet</u> | <u>RS, EH, WW, GB</u> |
| 4. <u>Emergency Spillway</u> | <u>RS, EH, WW, GB</u> |
| 5. _____ | _____ |
| 6. _____ | _____ |
| 7. _____ | _____ |
| 8. _____ | _____ |
| 9. _____ | _____ |
| 10. _____ | _____ |

PERIODIC INSPECTION CHECK LIST

PROJECT Wintonbury Dam

DATE 12/15/80

PROJECT FEATURE Earthfill Dam

NAME RS, EH, WW, GB

DISCIPLINE _____

NAME _____

AREA ELEVATED	CONDITIONS
<u>DAM EMBANKMENT</u>	
Crest Elevation	116.5± MDC Datum
Current Pool Elevation	No Pool - Dry Dam
Maximum Impoundment to Date	Unknown
Surface Cracks	None Observed
Pavement Conditions	N/A
Movement or settlement of crest	None Observed (Vehicle Ruts)
Lateral movement	None Observed
Vertical alignment	Looks Good
Horizontal alignment	Looks Good
Conditions at abutment at Concrete Structures	Good
Indications of Movement of Structural Items on Slopes	None
Trespassing on Slopes	Moderate
Sloughing or Erosion of Slopes or Abutments	None Observed
Rock Slope Protection-Riprap Failures	N/A
Unusual Movement or Cracking at or Near Toes	None Observed
Unusual Embankment or Downstream Seepage	None Observed (Dry Dam)
Piping or Boils	None Observed (Dry Dam)
Foundation Drainage Features	} Could Not Find Outlets
Toe Drains	
Instrumentation System	N/A

PERIODIC INSPECTION CHECK LIST

PROJECT Wintonbury Dam

DATE 12/15/80

PROJECT FEATURE Intake Riser & Channel

NAME RS, EH, WW, GB

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITION
<p><u>OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE</u></p> <p>a. Approach Channel</p> <p>Slope Conditions</p> <p>Bottom Conditions</p> <p>Rock Slides or Falls</p> <p>Log Boom</p> <p>Debris</p> <p>Condition of concrete lining</p> <p>Drains or Weep Holes</p> <p>b. Intake Structure</p> <p>Condition of Concrete</p> <p>Stop Logs and Slots</p>	<p>Natural Streambed</p> <p>Good</p> <p>Good</p> <p>None</p> <p>N/A</p> <p>Clean</p> <p>N/A</p> <p>N/A</p> <p>Concrete Riser For Pipe</p> <p>Good</p> <p>Clean</p>

PERIODIC INSPECTION CHECK LIST

PROJECT Wintonbury Dam

DATE 12/15/80

PROJECT FEATURE Outlet Structure & Channel

NAME RS, EH, WW, GR

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITIONS
<p><u>OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL</u></p> <p>General Condition of Concrete</p> <p>Rust or Staining</p> <p>Spalling</p> <p>Erosion or Cavitation</p> <p>Visible Reinforcing</p> <p>Any Seepage or Efflorescence</p> <p>Condition at Joints</p> <p>Drain Holes</p> <p>Channel</p> <p>Loose Rock or Trees Overhanging Channel</p> <p>Condition of Discharge Channel</p>	<div style="border: 1px solid black; width: 80px; height: 230px; margin-bottom: 20px;"></div> <p>No Outlet Structure Flow Discharges From Pipe onto Rip-Rap</p> <p>Excavated Channel</p> <p>Brush on Slope</p> <p>Some Erosion on Sides of Pool at Outlet.</p> <p>Otherwise Good</p>

PERIODIC INSPECTION CHECK LIST

PROJECT Wintonbury Dam DATE 12/15/20
 PROJECT FEATURE Emergency Spillway NAME RS, EH, WW, GB
 DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS</u>	
a. Approach Channel (Before Crest)	
General Condition	Good , but Vehicle Access
Loose rock overhanging channel	None
Trees Overhanging Channel	None
Floor of Approach Channel	Good
b. Weir and trailing walls	
General Condition of Concrete	N/A
Rust or Staining	
Spalling	
Any Visible Reinforcing	
Any Seepage or Efflorescence	
Drain Holes	
c. Discharge Channel(After Crest)	
General Condition	Good , but Vehicle Access
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	None
Floor of Channel	Good
Other Obstructions	None
* Note : Emergency Spillway is Grass Covered Earth.	

APPENDIX B

ENGINEERING DATA

ENGINEERING DATA CHECKLIST

<u>ITEM</u>	<u>AVAILABILITY</u>	<u>LOCATION</u>
LOCATION MAP	Available	Metropolitan District Commission, Hartford, CT
AS-BUILT DRAWINGS	Available	U.S. Soil Conservation Service Storrs, CT.
HYDROLOGIC & HYDRAULIC DATA	Available in Design Report	
SOIL BORINGS	Available in Design Report	
SOIL TESTING	Available in Design Report	
GEOLOGY REPORTS	Available in Design Report	
CONSTRUCTION HISTORY	Not Available	
OPERATION RECORDS	Not Available	
INSPECTION HISTORY	Available	State of Connecticut Department of Environmental Protection
DESIGN REPORT	Available	U.S. Soil Conservation Service Storrs, CT.
DESIGN COMPUTATIONS		
HYDROLOGIC & HYDRAULIC	Available in Design Report	
DAM STABILITY	Available in Design Report	
SEEPAGE ANALYSIS	Available in Design Report	

DESIGN REPORT

NORTH BRANCH PARK RIVER WATERSHED PROTECTION PROJECT RETARDING STRUCTURE - SITE No. 1 WINTONBURY DAM BLOOMFIELD, CONNECTICUT

The site of this proposed floodwater retarding structure is located approximately 1.2 miles northeast of Bloomfield Town Hall and 0.5 miles northwest of the intersection of Filley Street and Wintonbury Avenue. The dam is situated on the westerly branch of Beaman's Brook, a tributary of the North Branch of Park River.

The geographic location of this site may be found on the Metropolitan District Geodetic and Topographical Survey Sheet 235 (scale 1" = 200), published by the Commission on Regional Planning, Hartford County, Connecticut, by scaling 0.2 inches east (longitude 72° 43' 29.5" west) and 7.3 inches south (latitude 41° 50' 35.5" north) from the upper left hand corner of the sheet. Sheet 5 of the report is an overlay which when placed on the appropriate latitude and longitude of the Metropolitan District Geodetic and Topographical Sheet 235 will locate the proposed dam.

This dam, designed as a Class "C" structure has a watershed of 909 acres. It is to be constructed of compacted earth fill on a foundation of coarse non-plastic silts and silty fine sands. The principal spillway will be a single stage drop-inlet spillway with a reinforced concrete pipe 24 inches in diameter and a reinforced concrete riser with 2 feet x 6 feet inside dimensions. It will rest on a foundation of coarse non-plastic silts and silty fine sands.

An emergency spillway with a base width of 110 feet and crest elevation at 112.0 feet (MDD) will also be provided. The maximum velocity at the control section of the emergency spillway will be 6.45 feet per second for the design flood. The frequency of use will not exceed a one percent chance.

A rectangular low flow orifice, one foot by two foot, will be provided in the face of the riser to pass base flow of the stream and maintain a "dry" sediment pool. The invert elevation of the low flow orifice is set at 95.50 feet (MDD) on the assumption that the accumulation of sediment will be negligible in the vicinity of the

ANDERSON - NICHOLS & COMPANY

emergency spillway. The crest of the riser is set at elevation 99.50 feet (MDD). The riser was used to provide a simple means of vortex control and to facilitate the construction of an adequate trash rack.

The drawdown time was computed to be 9.42 days from the crest of the emergency spillway to the crest of the riser.

This is to be a dry reservoir (no permanent pool) but a drainage blanket with a toe drain is provided.

The flood routing procedure used in the design is described in Engineering Handbook, Section 5, Hydraulics, U. S. Department of Agriculture, Soil Conservation Service.

This flood routing procedure was used to determine the maximum stages shown in the table on the following page.

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Factor which Determines Stage	Surface Area (Acres)	Runoff (Inches)	Peak-Inflow (CFS)	Elev. of Max. Stage (Ft.) <u>1/</u>	Storage (Ac.Ft.)	Element of Structure Determined by Maximum Stage
Project Storm (Princ. Spwy. Design)	--	--	--	95.50	--	Invert of Low Flow Orifice
	7	--	--	99.50	--	Crest of Riser
	165	12.00	2280	112.0	845	Crest of Emergency Spillway
	209	15.95	5670	114.40	1295	Design High-water
	210 250 <u>2/</u>	19.80 --	7430 --	114.44 116.50	1305 1760 <u>2/</u>	Top of Dam
2.5x 6hr. point rainfall moisture condition II (Freeboard Design)						

1/ Referred to Metropolitan District Datum

2/ Determined on the basis of State Criteria requiring a minimum free-board of two feet above design highwater elevation.

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No. C-1482

Site No. 1 Wintonbury Dam

Howard Classification

The dam site is located about 5 to 6 miles upstream from the confluence of the river at Hartford, Connecticut. The area is afforded flood protection by the reservoir is relatively small and includes a number of residences, commercial and industrial properties.

These conditions, under Soil Conservation Service class definitions, place the structure as

Class C.

Job No. C-1452

Expt. Data For Hydro. Data1. Soil-Cover Complex Number

a. For Principal Spillway - Normal, Moisture Condition II
Curve Number 35.

b. For Emergency Spillway Design II, Spillway, Soil Cover
Service criteria permit use of Moisture Condition II
with Curve No. 35. However a letter from the
Connecticut Water Resources Commission dated
April 30 1959, to John J. Mozzetti specifying that
in determining this hydrograph the rate of precipitation
or total precipitation does may not exceed 0.25 inches
per hour. In order to satisfy this specification
the Curve No. is raised to 65.

c. For Emergency Spillway Freeboard Hydrograph,
Moisture Condition II, Curve No. 67.

2. Time of Concentration

Overland flow: distance about 1500 ft.; slope 3 to 5%;
velocity taken = 0.75 fps.

$$\text{Time} = \frac{1500}{0.75} = 2000 \text{ sec.}$$

Channel flow: distance 11,000 ft.

At slope 1/2 percent or 0.005; $s^{1/2} = 0.07$

$$n = 0.02$$

At 1/2 ft. radius r, about 1.75 ft.

$$r^{2/3} \text{ taken} = 1.5$$

$$V = \frac{4.48}{0.02} \times 1.5 \times 0.07 = 2.9 \text{ fps.}$$

$$\text{Time} = \frac{11000}{2.9} = 2820 \text{ sec.}$$

Total time: $2820 \text{ sec} = 1.35 \text{ hr.} = T_c =$
used in hydrograph computations

Job No. C-1452Basic Data for Hydrograph Computations3. Storm Rainfall and Durationa. Principal Spillway HydrographPoint rainfall - 14.75 in.Areal rainfall - 13.91 in.Duration - 19 hr.b. Emergency Spillway Design HydrographDuration 6 hr.6 hr. point rainfall from SCS-NEH4, Sup. H, Fig. 3.1-1; 10.6 in.6 hr. rainfall for design = $1.75 \times 10.6 = 18.55 \text{ in.}$ Areal rainfall = $0.94 \times 18.55 = 17.45 \text{ in.}$ c. Emergency Spillway Flooded HydrographDuration 6 hr.6 hr. point rainfall (source as no 45 above) = 10.6 in.6 hr. " " for hydrograph est. = $2.5 \times 10.6 = 26.5 \text{ in.}$ Areal rainfall = $0.94 \times 26.5 = 25.0 \text{ in.}$ Sediment Storage ComputationBasis - Rate of accumulation in reservoir 0.1 ton per acre
of drainage area per year.

Dr. area = 1.42 sq. mi. - 909 ac.

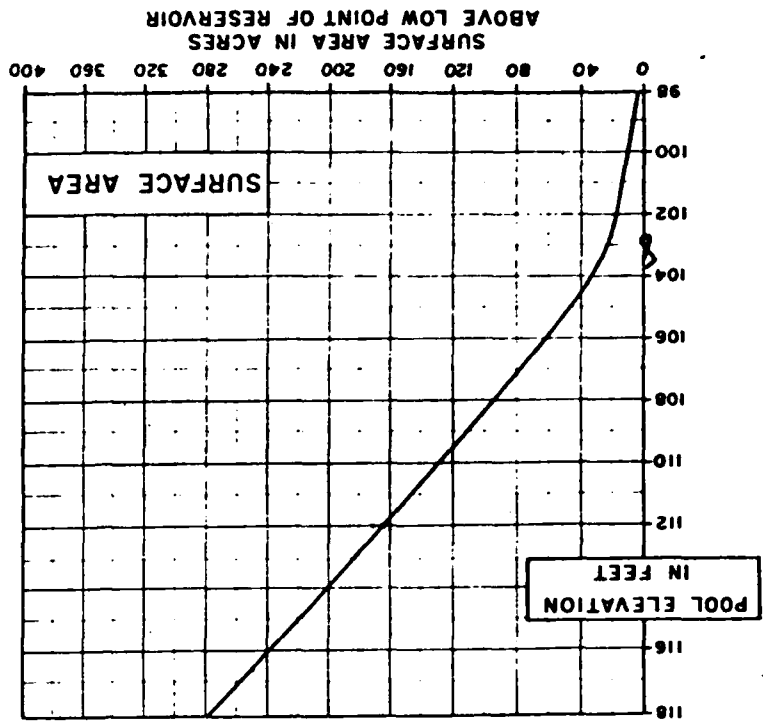
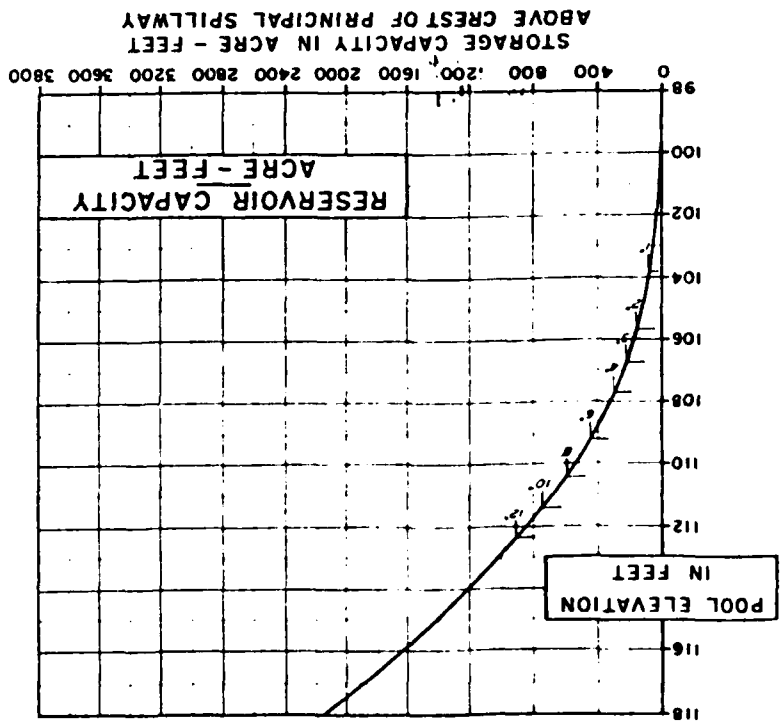
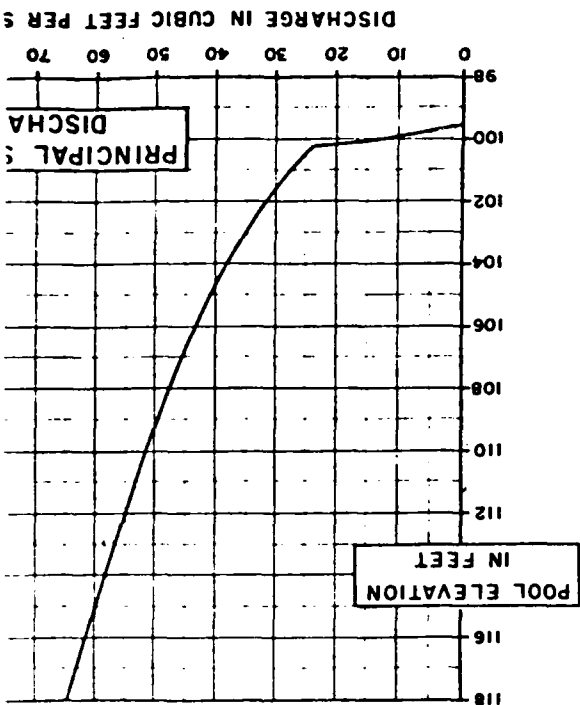
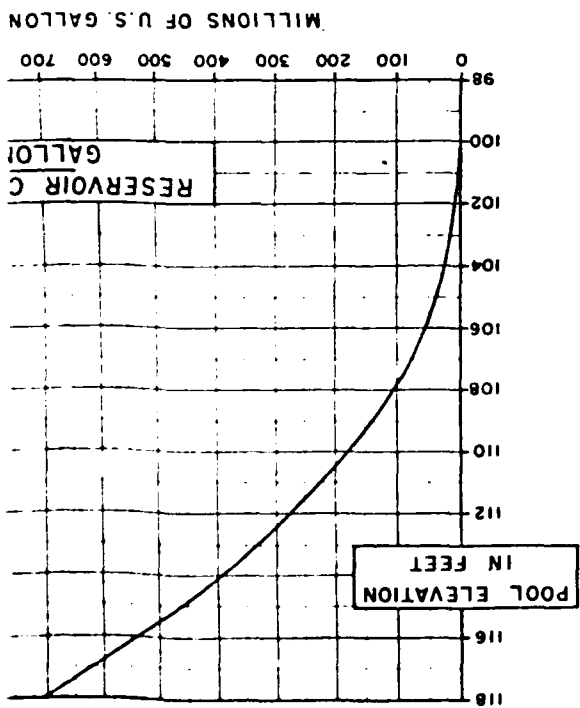
50 yr. acc. = $0.1 \times 909 \times 50 = 4550 \text{ tons}$

Dry unit weight = 90 lb. per cu. ft.

50 yr. acc. volume = $\frac{4550 \times 2000}{90 \times 43,560} = \underline{2.32 \text{ ac. ft.}}$

RESERVOIR OPER

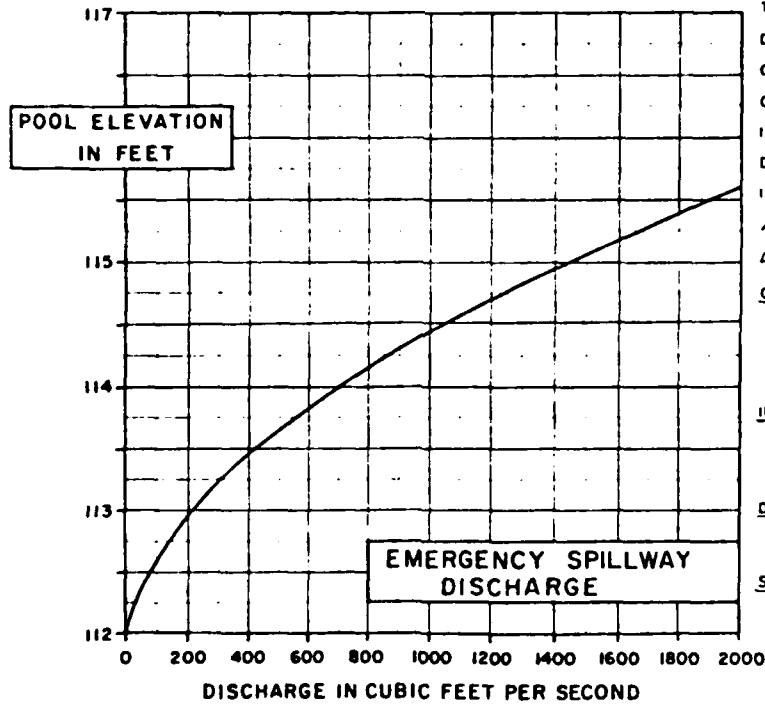
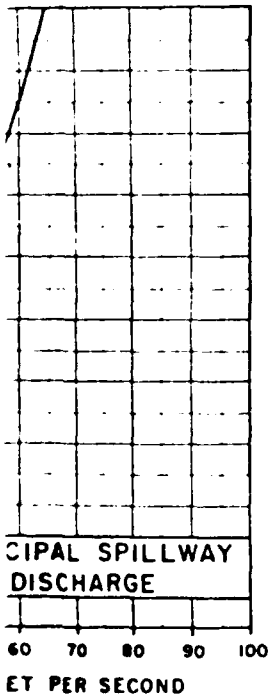
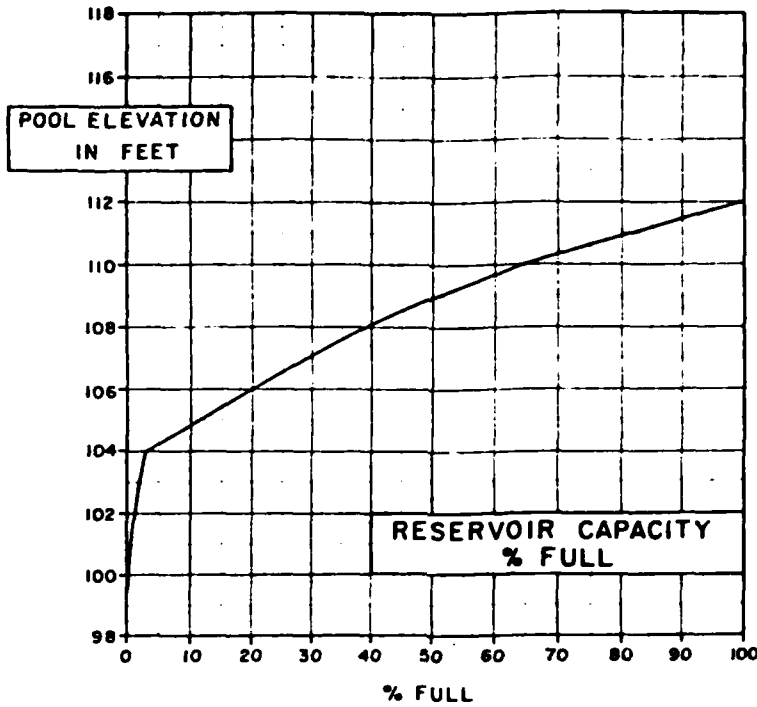
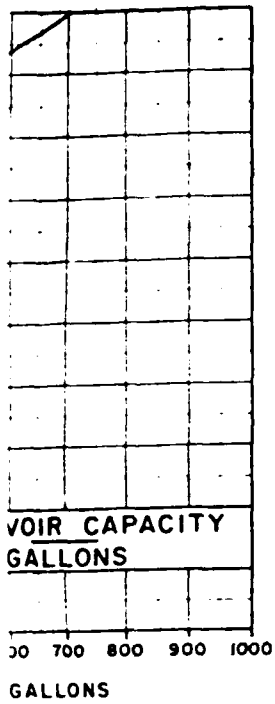
WINTONBURY RESERVOIR - BEAMAN'S BROOK -



ABOVE LOW POINT OF RESERVOIR

PERATION DATA

OK - NORTH BRANCH PARK RIVER WATERSHED



PERTINENT DATA

TOP OF DAM EL 116.5
 DESIGN HIGH WATER EL 114.4
 CREST EMERGENCY SPILLWAY EL 112.0
 CREST PRINCIPAL SPILLWAY EL 99.5
 INVERT LOW FLOW ORIFICE EL 95.5
 DRAINAGE AREA CONTROLLED 142.50 MI²
 1" OF RUNOFF = 75.73 ACRE-Feet
 ALL ELEVATIONS REFER TO METROPOLITAN
 DISTRICT DATUM
 CONSTRUCTED BY
 STATE OF CONNECTICUT
 DEPARTMENT OF AGRICULTURE &
 NATURAL RESOURCES
 JOSEPH N. GILL, COMMISSIONER
 IN ASSOCIATION WITH THE
 U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 PUBLIC LAW 566 FUNDS
 DESIGNED BY
 ANDERSON - NICHOLS
 CONSULTING ENGINEERS
 STATUS
 COMPLETED JULY 12, 1963

Anderson - Nichols Associates February 1967

WATER RESOURCES UNIT - D.C.P.

OPERATION AND MAINTENANCE INSPECTION REPORT

PROJECT: Bloomfield - Wintonbury Reservoir

DATE: August 7, 1979

INSPECTION PARTY: A. Horwarth, Soil Conservation Service; and
A. Roberts, V. Galgowski, Department of Environmental Protection

ITEM	CONDITION S or U*	MAINTENANCE OR REPAIRS REQUIRED	DATE COMPLETED
I. Embankments			
A. Vegetation	S	Mow grass	
B. Rip rap	S		
C. Drains	S		
II. Principal Spillway			
A. Trash rack	S		
B. Gates	S		
C. Stilling basin	S	Remove brush	
D. Conduit	S		
III. Emergency Spillway			
A. Vegetation	S		
B. Obstructions	S		
IV. Outlet Channels			
A. Slope protection	S		
B. Debris	S		
V. Reservoir Area			
A. Debris	S		
B. Stop logs	S		
VI. Miscellaneous			
A. Access road	S		
B. Fences	N/A		

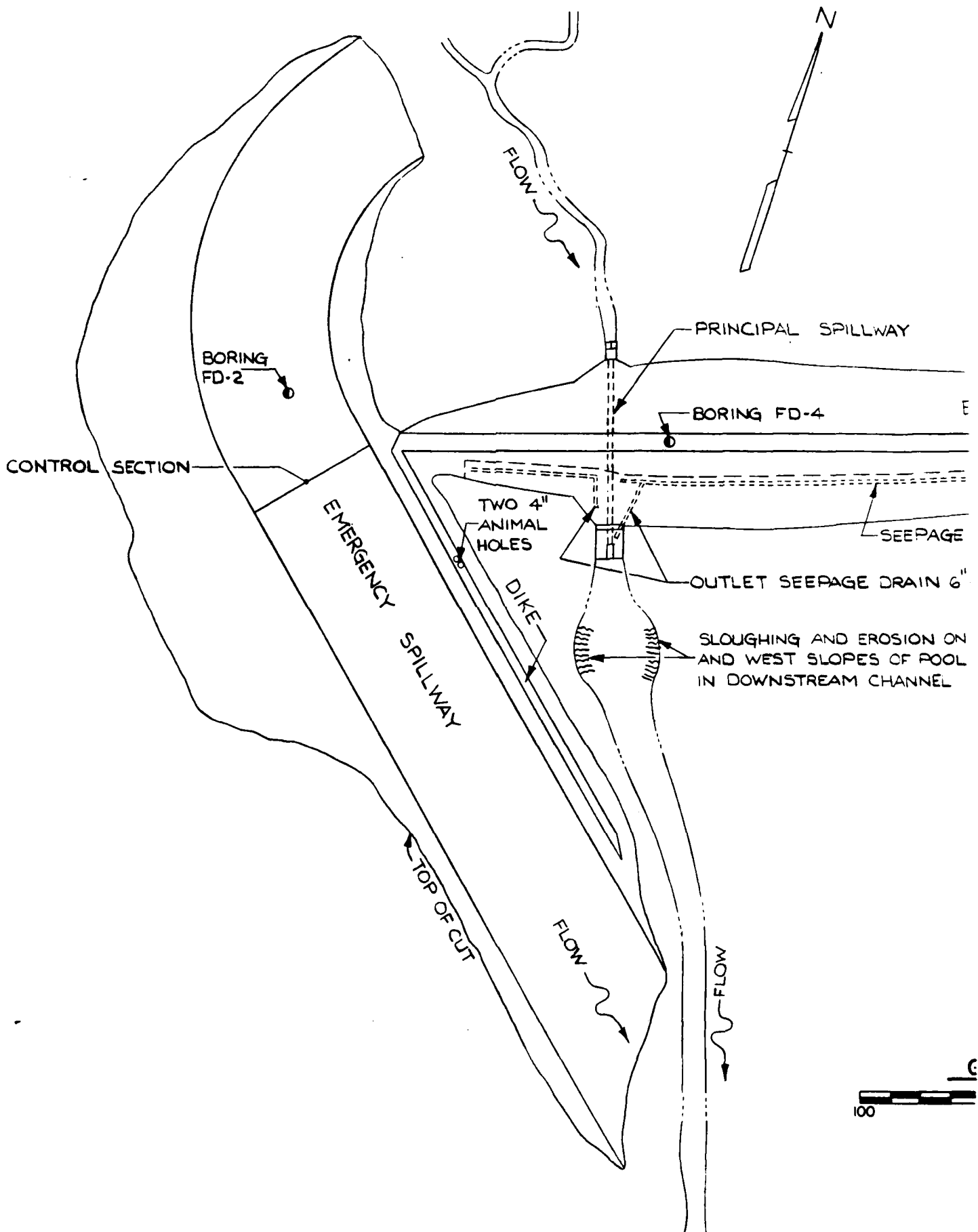
Remarks: Ruts on top of dike must be filled and reseeded.

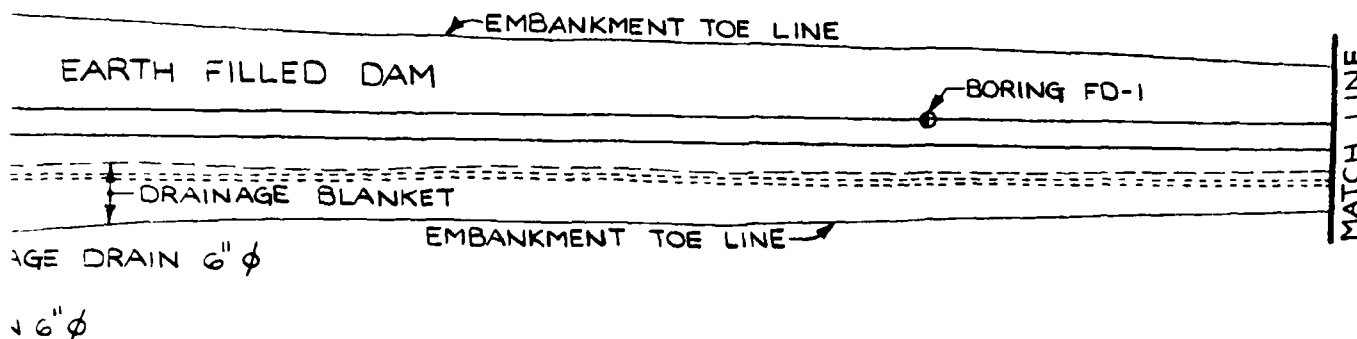
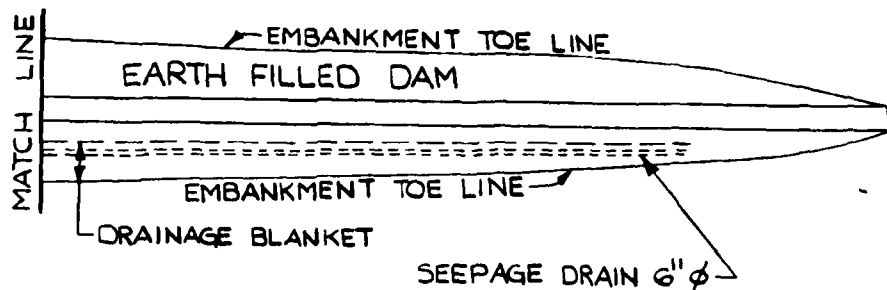
Inspected by: Victor F. Galgowski Title Supt. of Dam Maintenance

* S = Satisfactory
U = Unsatisfactory
N/A = Not applicable

BIBLIOGRAPHY

1. "Recommended Guildelines for Safety Inspection of Dams", Department of the Army, Office of the Chief Engineers, Washington, D.C. 20314, 1979.
2. Design of Small Dams, Revised Reprint, United States Department of the Interior, Bureau of Reclamation, United States Government Printing Office, Washington, D.C. 1977.
3. Soil Survey, Hartford County, Connecticut, United States Department of Agriculture, U.S. Government Printing Office, Washington 25, D.C. 1962
4. Donald M. Gray: Handbook on the Principles of Hydrology, Water Information Center, 1970.
5. Hunter Rouse: Engineering Hydraulics, John Wiley and Sons, New York, 1950.
6. Victor L. Streeter: Fluid Mechanics, McGraw-Hill Book Company, Inc. 1958.
7. S.C.S. National Engineering Handbook, Hydrology Section 4, Soil Conservation Service, U.S. Department of Agriculture, 1972.
8. "North Branch Park River Watershed Protection Project Design Report, Site No. 1 (Wintonbury Dam)" Bloomfield, Conn.; Anderson-Nichols, Consulting Engineers Boston/Hartford 1960.



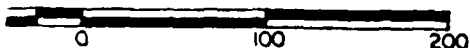


ON EAST
COL AREA
EL

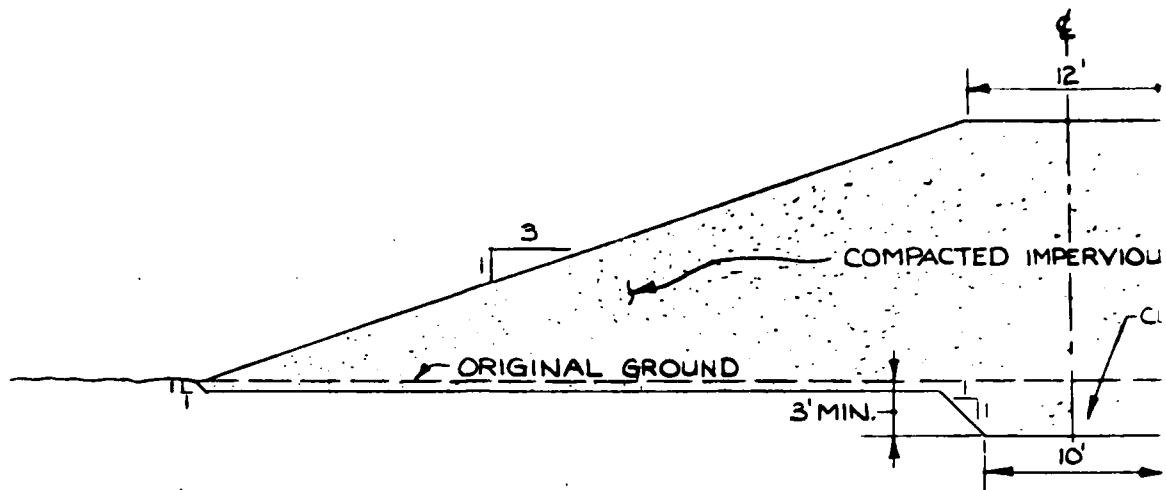
REFERENCE:

DESIGN DRAWINGS SUPPLIED BY U.S. SOIL
CONSERVATION SERVICE MANSFIELD, CONN.

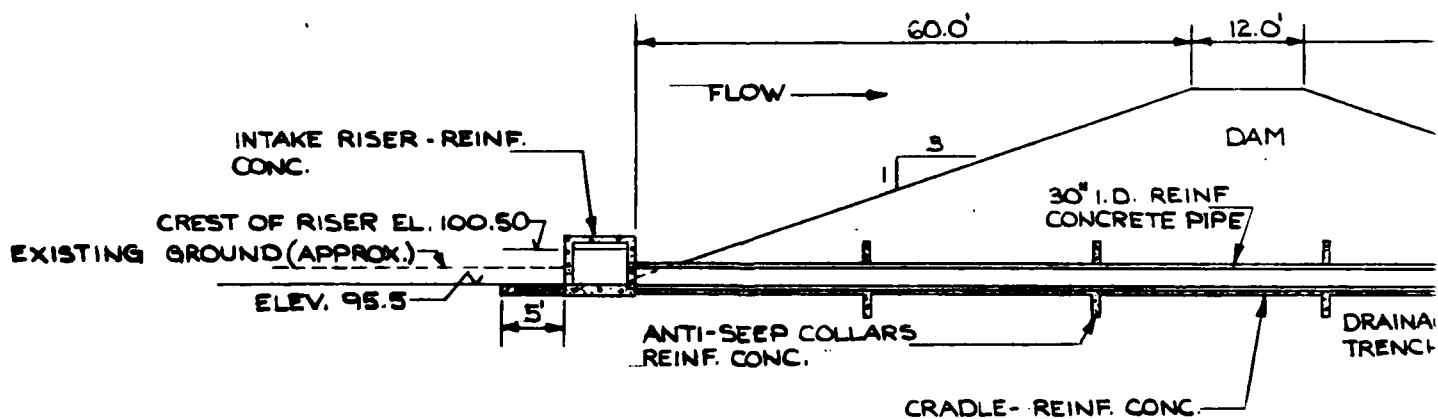
GENERAL PLAN



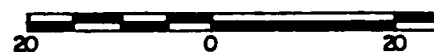
GOODKIND & O'DEA INC.- SINGHAL ASSOCIATES, INC. ENGINEERS		U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.	
NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS			
GENERAL PLAN			
WINTONBURY DAM BLOOMFIELD, CONNECTICUT			
DRAWN BY	CHECKED BY	APPROVED BY	SCALE: AS NOTED
E.T.H.	W.J.W.	L.A.B.	DATE: MAY, 1981 SHEET 8-1

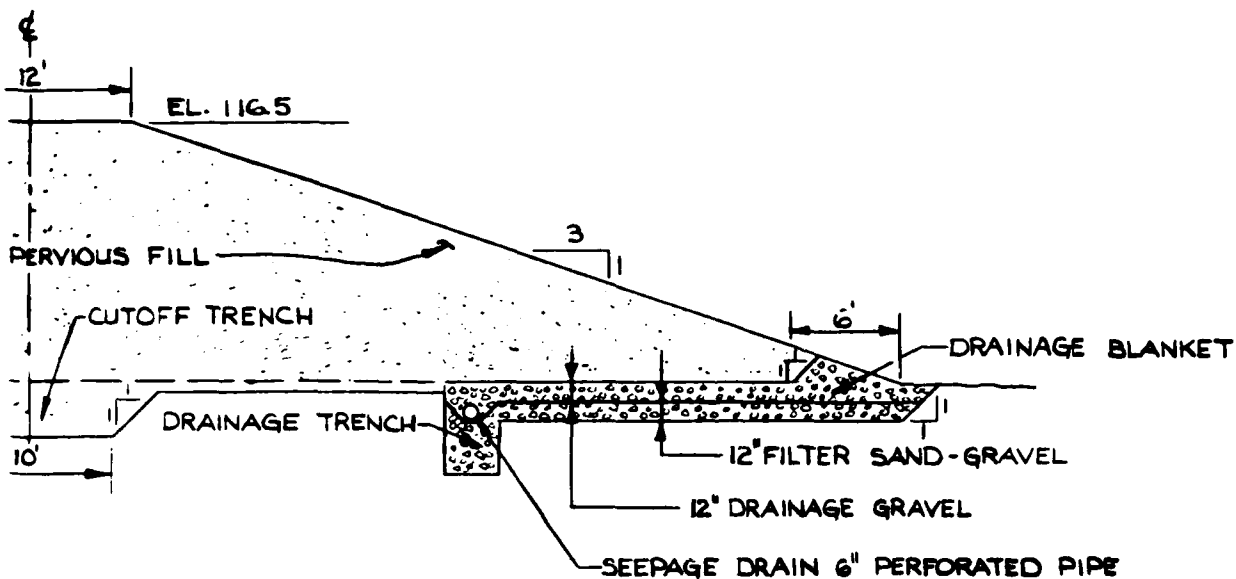


TYPICAL SECTION



PROFILE ALONG C OF PRINCIPAL





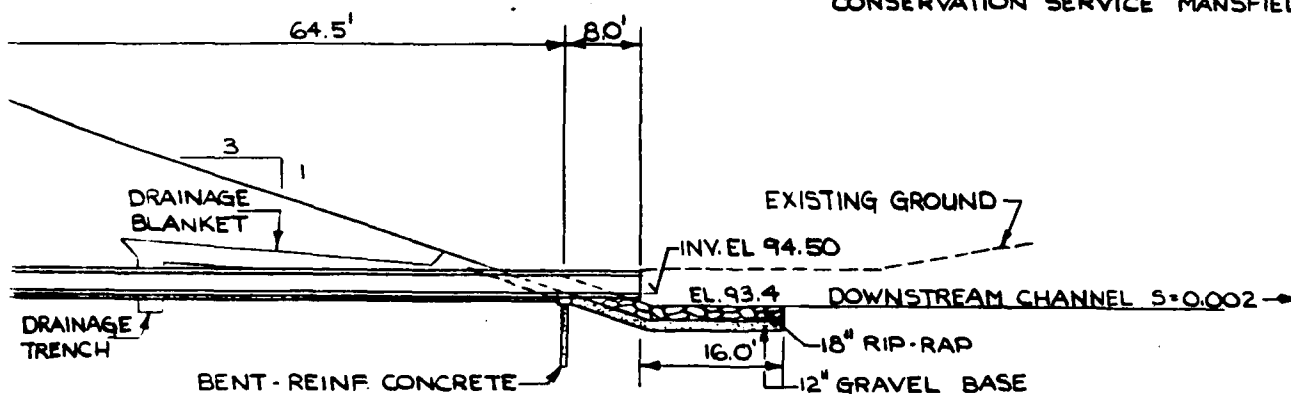
SECTION OF DAM

NOTE:

ALL ELEVATIONS REFERENCED TO METROPOLITAN DISTRICT DATUM.

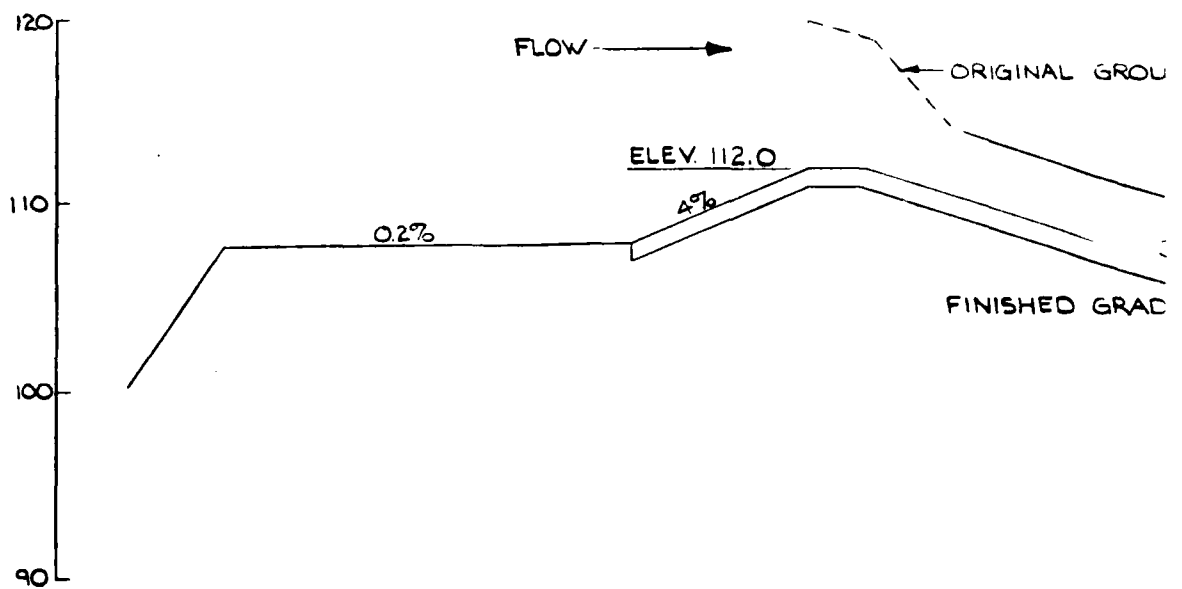
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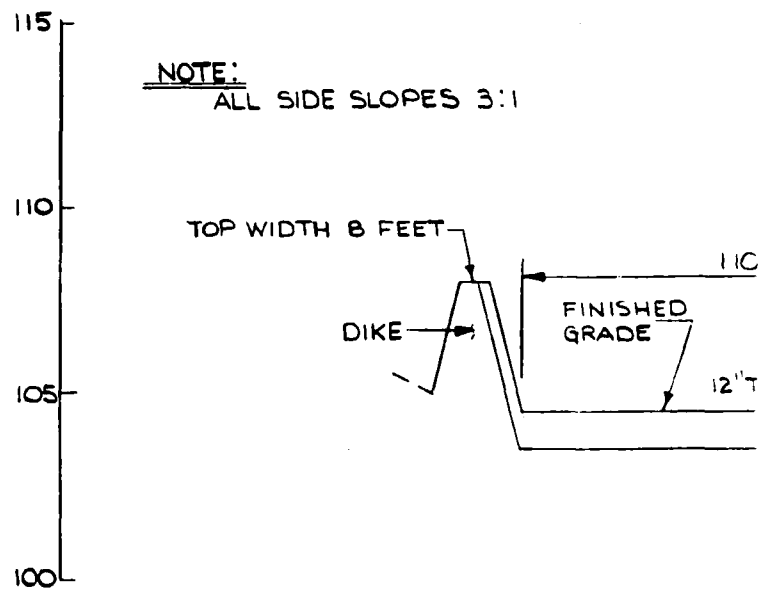
PRINCIPAL SPILLWAY

GOODKIND & O'DEA INC.- SINGHAL ASSOCIATES/LJO ENGINEERS		U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.	
NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS TYP. DAM SECTION & PROFILE OF PRINCIPAL SPILLWAY			
WINTONBURY DAM BLOOMFIELD, CONNECTICUT			
DRAWN BY E.T.K.	CHECKED BY W.J.W.	APPROVED BY L.J.B.	SCALE: AS NOTED DATE: MAY, 1981 SHEET B-2



PROFILE ALON

HORIZONTAL 100
VERTICAL 10

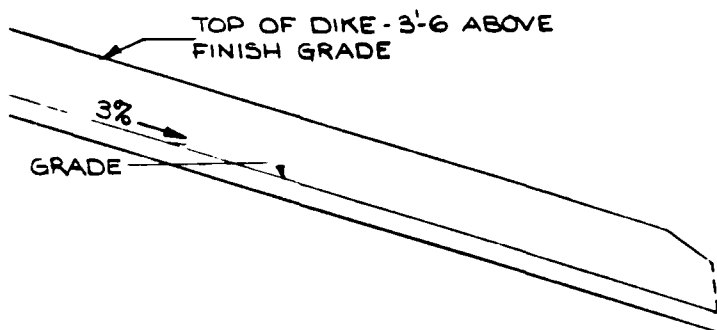


NOTE:
ALL SIDE SLOPES 3:1

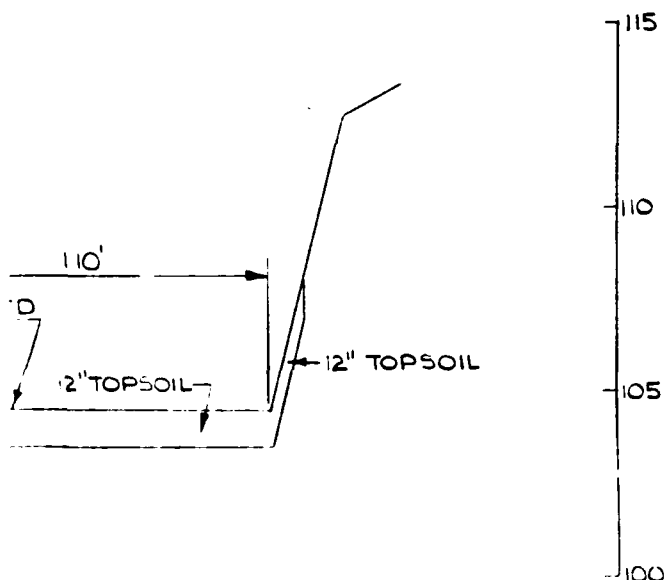
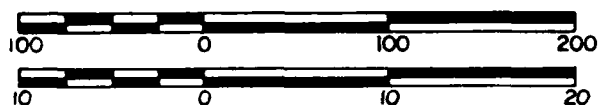
TYPICAL SECTION OF EME

HORIZONTAL 50 0
VERTICAL 5 0

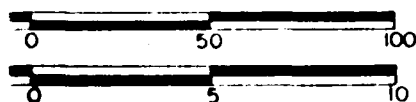
GROUND



ALONG C OF EMERGENCY SPILLWAY



F EMERGENCY SPILLWAY



NOTE:

ALL ELEVATIONS REFERENCED TO METROPOLITAN
DISTRICT DATUM.

REFERENCE:

DESIGN DRAWINGS SUPPLIED BY U.S. SOIL
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2

GOODKIND & O'DEA INC- SINGHAL ASSOCIATES/LJO ENGINEERS	U.S. ARMY ENGINEER DIV NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.
--	--

NATIONAL PROGRAM OF INSPECTION OF NON-FED DAMS
PROFILE & TYP. SECTION OF EMERGENCY SPILLWAY

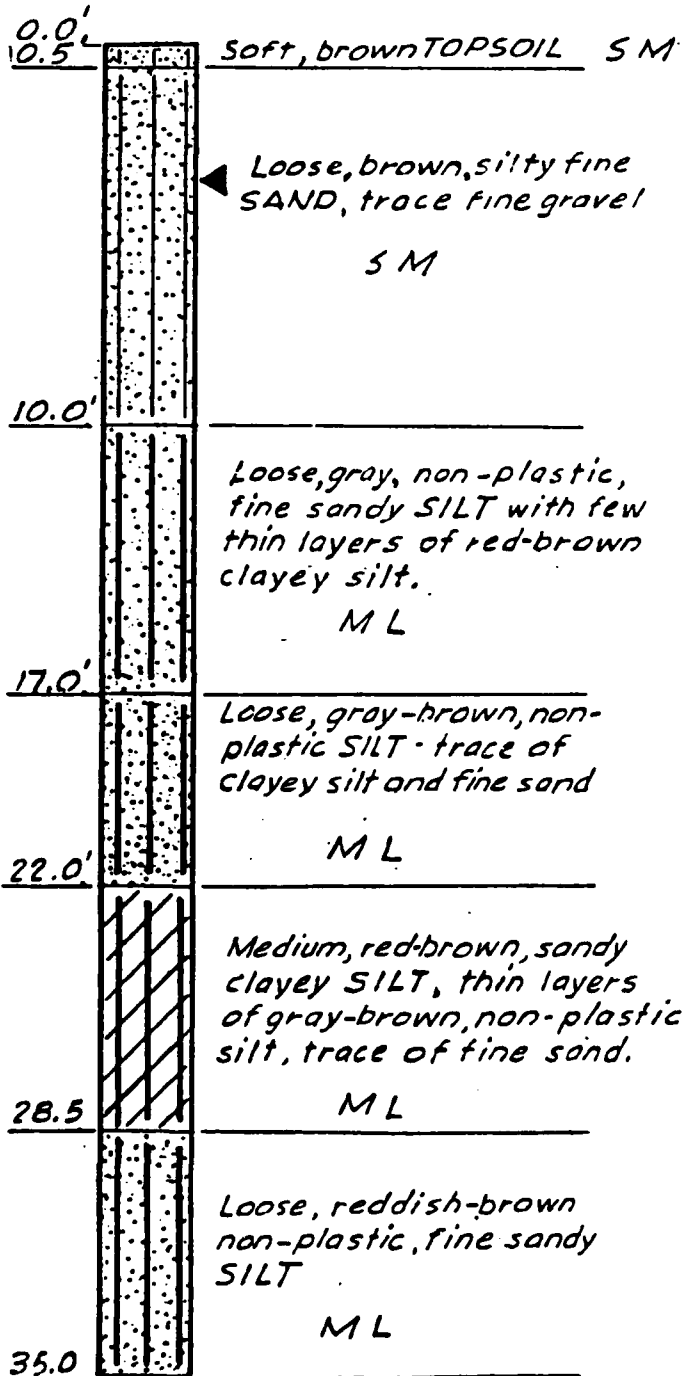
WINTONBURY DAM
BLOOMFIELD, CONNECTICUT

DRAWN BY E.T.R.	CHECKED BY W.M.	APPROVED BY J.A.	DATE 10/1/62
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FD-1

10-20-58

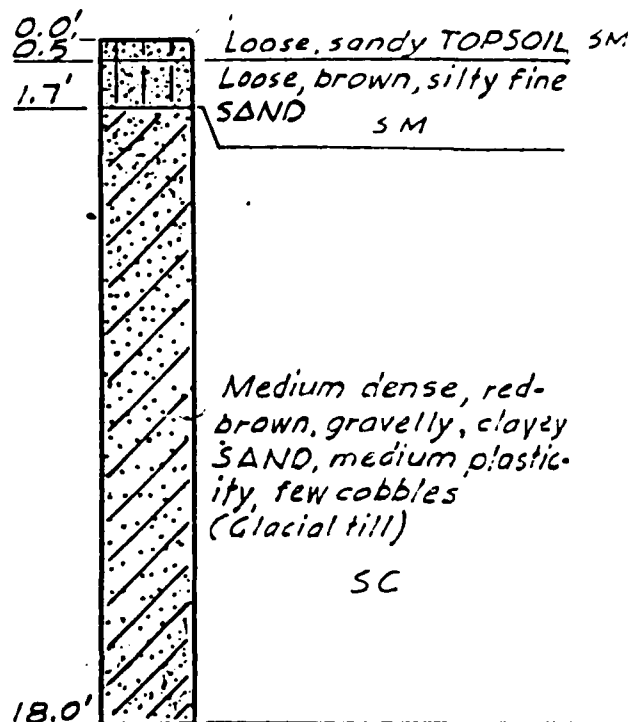
EL. 103 ± M.D.D.



FD-2

10-24-58

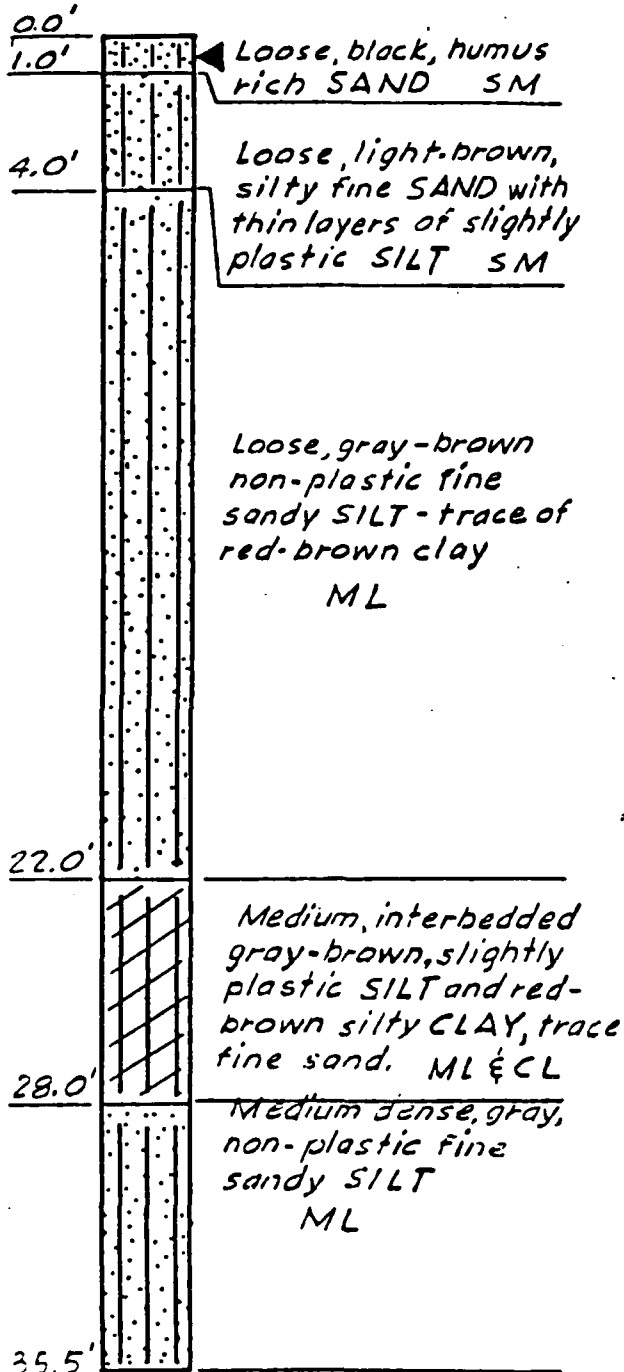
EL. 127 ± MDD



FD-4

10-27-58
EL. 971 MDD

SM



NOTES:

- 1.) ALL ELEVATIONS REFERENCED TO METROPOLITAN DISTRICT DATUM.
- 2.) SEE SHEET B-1 "GENERAL PLAN" FOR LOCATION OF BORINGS.
- 3.) SEE DESIGN DRAWINGS FOR ADDITIONAL BORINGS.

REFERENCE:

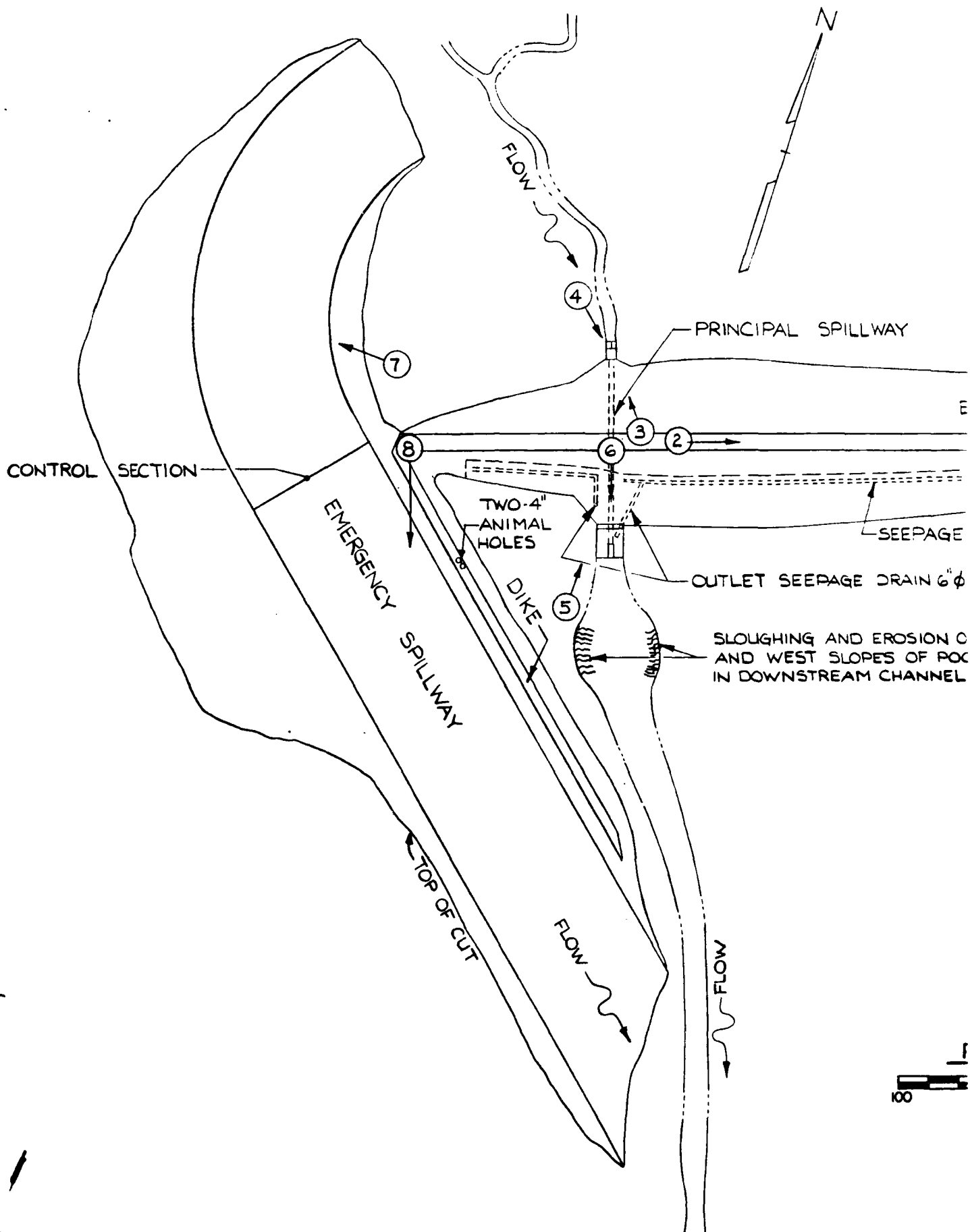
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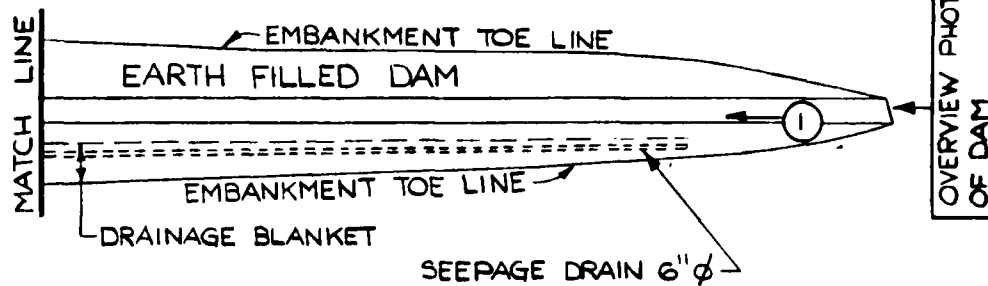
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GOODKIND & O'DEA INC.- SINGHAL ASSOCIATES/LTD ENGINEERS		U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.	
NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS TYPICAL BORINGS			
WINTONBURY DAM BLOOMFIELD, CONNECTICUT			
DRAWN BY E.T.H.	CHECKED BY W.J.W.	APPROVED BY L.J.B.	SCALE: NONE DATE: MAY, 1961 SHEET: B-4

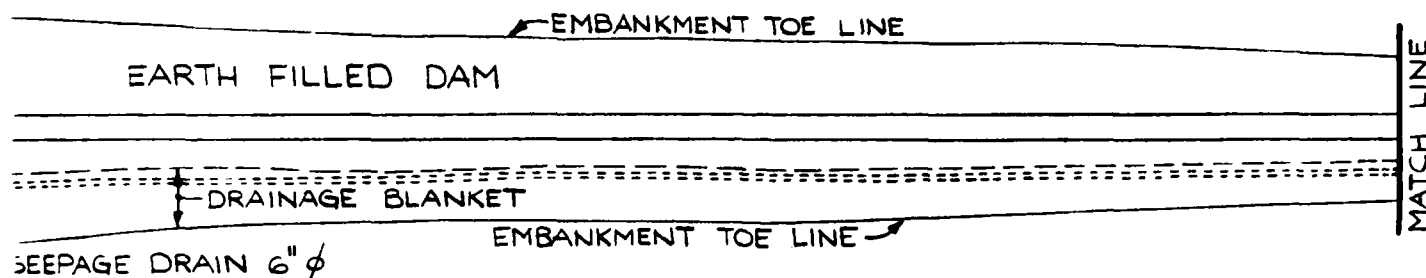
APPENDIX C

DETAIL PHOTOGRAPHS





VAY



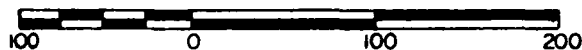
DRAIN 6" ϕ

EROSION ON EAST
SIDE OF POOL AREA
CHANNEL

REFERENCE:

DESIGN DRAWINGS SUPPLIED BY U.S. SOIL
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PHOTO LOCATION PLAN



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NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS			
PHOTO LOCATION PLAN			
WINTONBURY DAM BLOOMFIELD, CONNECTICUT			
DRAWN BY E.T.R.	CHECKED BY W.J.W.	APPROVED BY L.J.B.	SCALE: AS NOTED DATE: MAY, 1981 SHEET C-1



PHOTO 1 - View looking southwest along dam crest and downstream slope. Note use by vehicles. Slope of emergency spillway visible in background.



PHOTO 2 - View looking northeast along dam crest. Note rutting by vehicles.



PHOTO 3 - Upstream channel.



PHOTO 4 - Principal Spillway - Intake Riser



PHOTO 5 - Principal Spillway - Outlet Pipe



PHOTO 6 - Downstream channel. Note sloughing and erosion on the slopes at the pool area.



PHOTO 7 - View across inlet end of emergency spillway. Note use by vehicles.



PHOTO 8 - View looking at outlet end of the emergency spillway.

APPENDIX D

HYDROLOGIC AND HYDRAULIC COMPUTATIONS

SINGHAL ASSOCIATES

CONSULTING ENGINEERS

(CIVIL, HYDRAULICS, SANITARY)

827 MAPLEDALE ROAD, ORANGE, CT 06477

TEL: (203) 795-6562

Job WINTONBURY DAM

Sheet Number D-1

Date 12. 20. 1980

By R.S

TEST FLOOD

DRAINAGE AREA = 1.42 SQ. MILES

THE DRAINAGE AREA IS FLAT WITH
AVERAGE SLOPE UNDER 1%

FROM THE CORPS OF ENGINEERS' CHART FOR
'FLAT & COASTAL' TERRAIN,

$$\begin{aligned} \text{PMF} &= 975 \text{ CFS} / \text{SQ. MILE} \\ &= 975 \times 1.42 = \underline{1385 \text{ CFS}} \end{aligned}$$

SIZE AND HAZARD CLASSIFICATION

MAXIMUM HEIGHT OF DAM = 23.0 FT.

MAXIMUM IMPOUNDMENT UPTO

TOP OF DAM = 1750 AC-FT.

AS THE STORAGE LIES BETWEEN 1000 AC-FT
AND 50,000 AC-FT, THE SIZE OF THE DAM IS =
"INTERMEDIATE" EVEN THOUGH THE HEIGHT DOES NOT
EXCEED 40 FT.

THE HAZARD POTENTIAL IS "HIGH" DUE TO THE
EXISTENCE OF SEVERAL ROADS, PUBLIC BUILDINGS,
LARGE NUMBER OF HOUSES ETC. ON THE DOWNSTREAM
SIDE WHICH WILL BE FLOODED IN CASE OF DAM
FAILURE. THERE IS POTENTIAL FOR EXCESSIVE
ECONOMIC LOSS IN ADDITION TO LOSS OF 'MORE
THAN FEW' LIVES.

AS PER TABLE 3, PAGES D-12, D-13 OF THE
"RECOMMENDED GUIDELINES FOR SAFETY INSPECTION
OF DAMS", THE RECOMMENDED TEST FLOOD WILL
BE THE PMF = 1385 CFS

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Job WINTONBURY DAM
 Sheet Number D-2
 Date 12.20.1980
 By R.S.

SPILLWAY CAPACITIES

THE SPILLWAY CONSISTS OF THE FOLLOWING:

1-30" R.C. WATER PIPE (UPSTREAM INVERT
 ELEV. 95.5, WEIR CREST ELEV. 100.5)

1- EMERGENCY SPILLWAY, 110 FT. WIDE AT
 CONTROL SECTION, WITH CREST ELEV. 112.0

CAPACITIES AT VARIOUS ELEVATIONS ARE TABULATED
 BELOW

ELEV.	CAPACITY - CFS		
	PRINCIPAL SPILLWAY	EMERGENCY SPILLWAY $Q = 3.0 L H^{3/2}$	TOTAL
112.0	55.0	0.0	55.0
112.5	56.0	118.0	174.0
113.0	57.0	330.0	387.0
113.5	58.0	606.0	664.0
114.0	59.0	933.0	992.0
114.5	60.0	1304.0	1364.0
115.0	61.0	1715.0	1776.0
115.5	62.0	2160.0	2222.0
116.0	63.0	2640.0	2703
116.5	64.0	3150.0	3214

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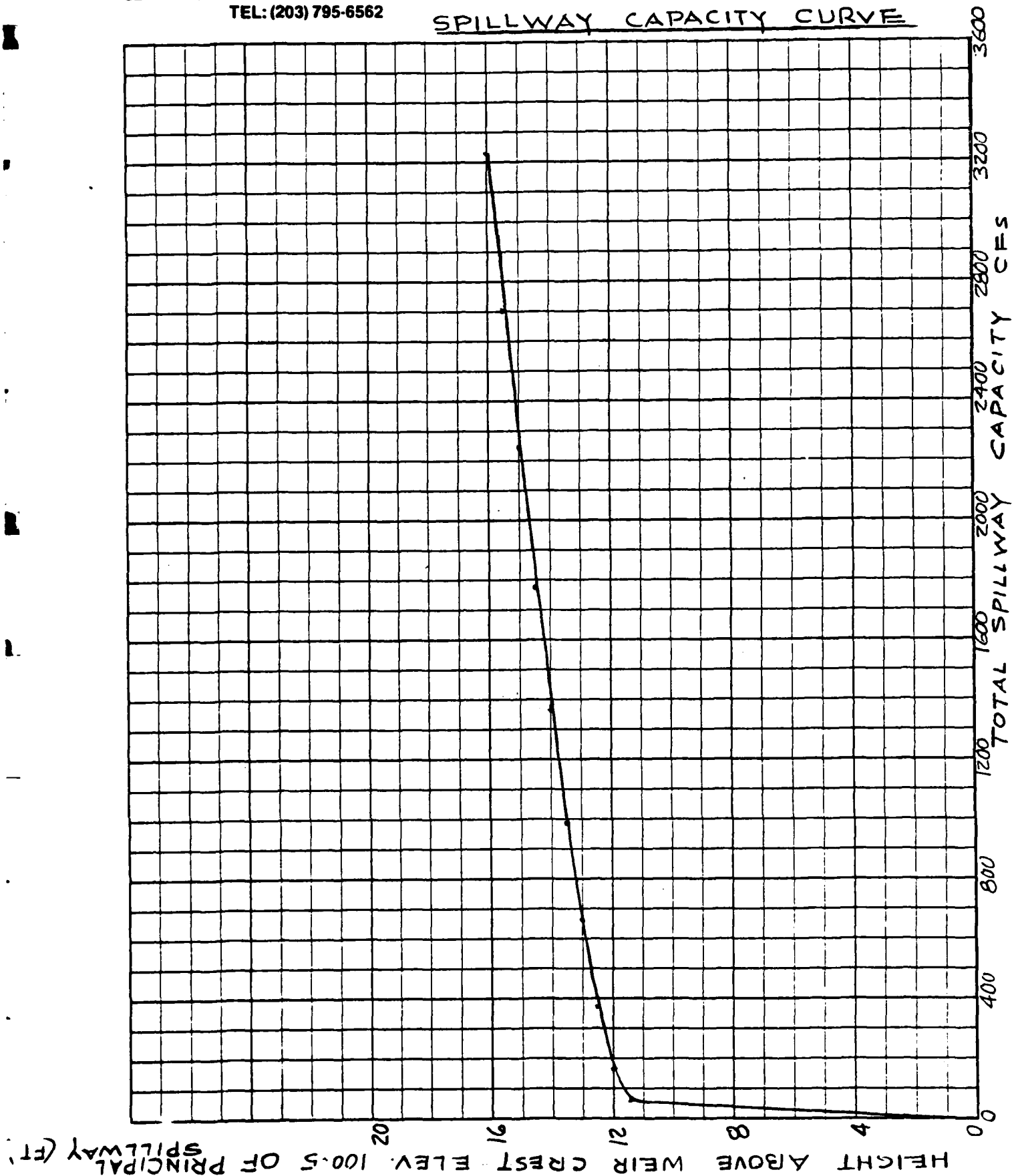
Job WINTONBURY DAM

Sheet Number D-3

Date 12-20-1980

By R.S.

SPILLWAY CAPACITY CURVE



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Job WINTONBURY DAMSheet Number D-4Date 12.23.1980By R.S.

SURCHARGE STORAGES
AND
WATER SURFACE AREAS

RESERVOIR WATER ELEVATION	HEIGHT ABOVE EMERGENCY SPILLWAY CREST (FT.)	WATER SURFACE AREA (ACRES)	SURCHARGE STORAGE CAPACITY (AC-FT.)
112.0	0.0	165.0	0.0
112.5	0.5	174.0	85.0
113.0	1.0	182.0	170.0
113.5	1.5	191.0	270.0
114.0	2.0	200.0	370.0
114.5	2.5	210.0	470.0
115.0	3.0	220.0	570.0
115.5	3.5	230.0	675.0
116.0	4.0	240.0	780.0
116.5	4.5	250.0	910.0

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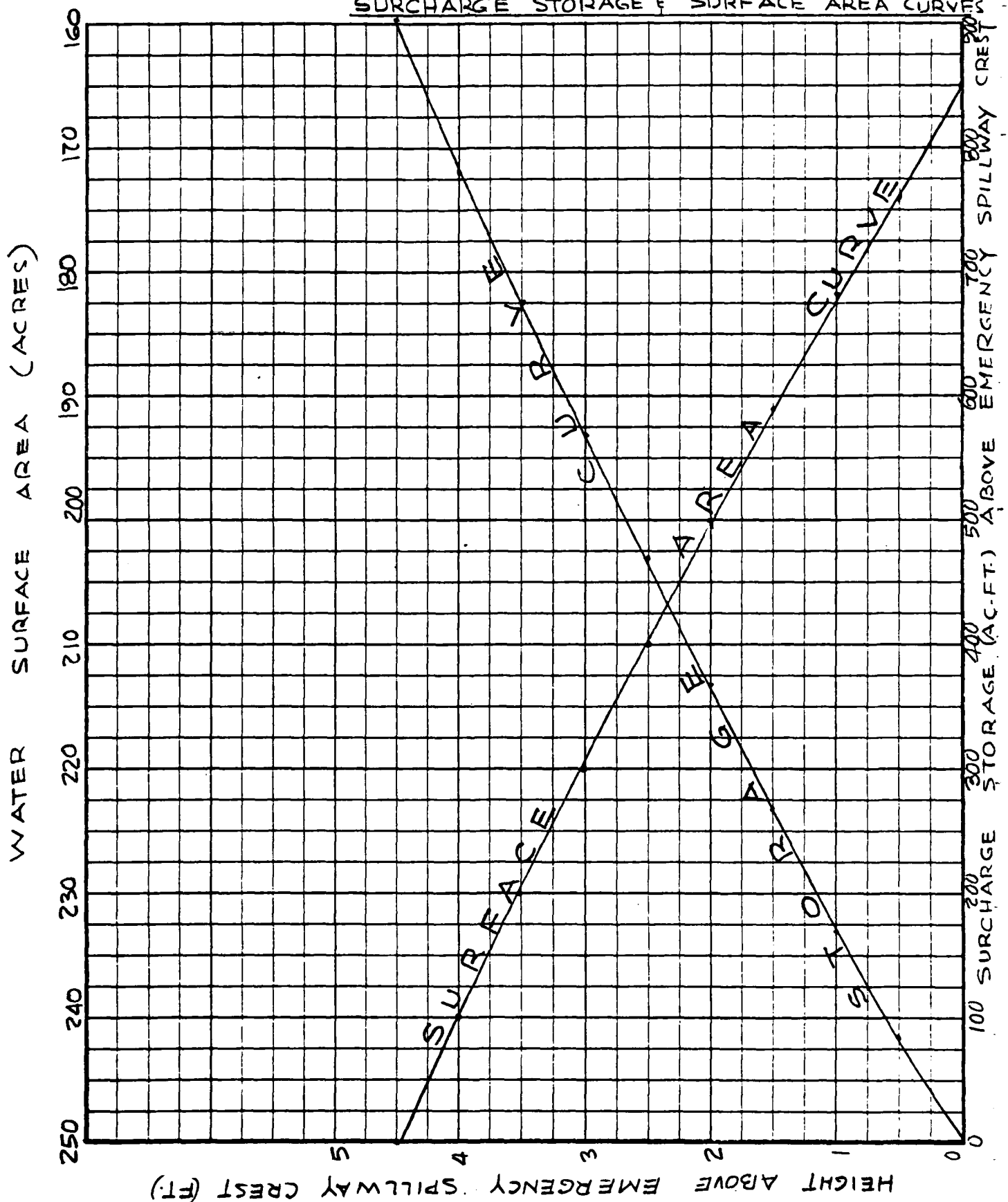
Job WINTONBURY DAM

Sheet Number D-5

Date 12-24-1980

By R.S.

SURCHARGE STORAGE & SURFACE AREA CURVES



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TEL: (203) 795-6562Job WINTONBURY DAMSheet Number D- 6Date 12-27-1980By R.S.INFLOW FLOOD HYDROGRAPHTEST FLOOD (PMF) = 1385 CFS
DRAINAGE AREA = 1.42 SQ. MILESAS PER 'HYDROLOGY, SECTION 4, S.C.S. NATIONAL
ENGINEERING HANDBOOK':

$$q_p = \frac{484 \cdot A \cdot Q}{T_p}$$

AND
$$T_b = 2.67 T_p$$

WHERE T_b = TIME BASE OF HYDROGRAPH IN HOURS T_p = TIME IN HOURS FROM START OF RISE
OF HYDROGRAPH TO ATTAINMENT OF PEAK q_p = PEAK RATE OF RUNOFF IN CFS A = DRAINAGE AREA IN SQ. MILES Q = TOTAL RUNOFF IN INCHESSUBSTITUTING THE KNOWN VALUES OF A , Q AND q_p :

$$1385 = \frac{484 \times 1.42 \times 19}{T_p}$$

FROM WHICH $T_p = 9.5$ HOURS

AND
$$T_b = 2.67 \times 9.5 = 25 \text{ HOURS } \pm$$

THE TRIANGULAR HYDROGRAPH HAS
ACCORDINGLY BEEN DRAWN ON THE FOLLOWING
PAGE.

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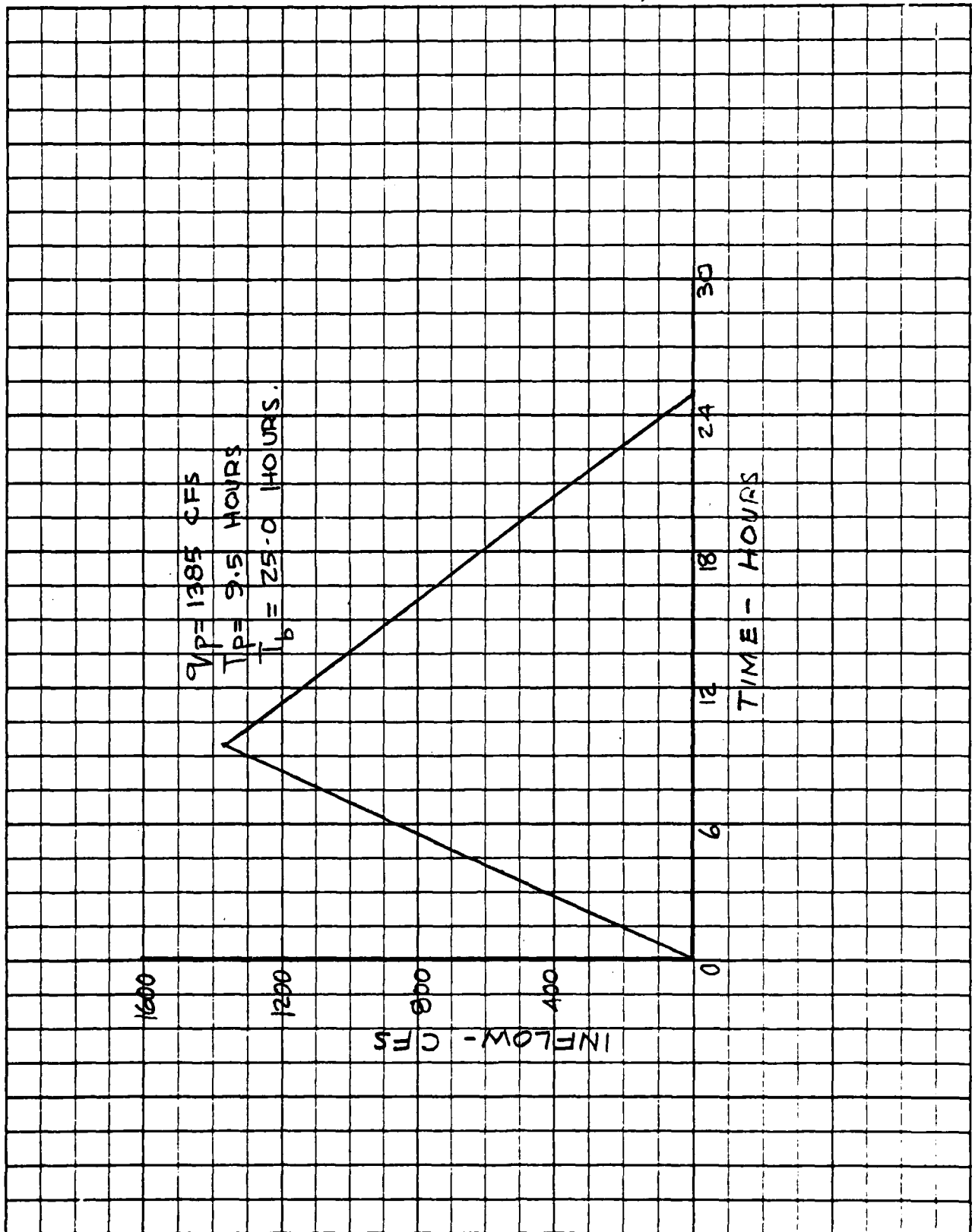
Job WINTONBURY DAM

Sheet Number D-7

Date 12-27-1980

By R.S.

INFLOW HYDROGRAPH



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Job WINTONBURY DAM
 Sheet Number D-8
 Date 1-19-1981
 By R.S

TIME (HRS)	AT (HRS)	AVERAGE INFLOW RATE (CFS)	AVERAGE INFLOW (AC-FT.)	T. L. RESERVOIR ELEVATION AT END OF ΔT	RAT. OF OUTFLOW		OUTFLOW FOR ΔT AC-FT.	ITEM STORAGE ΔS AC-FT.	TOTAL STORAGE AC-FT.	RESERVOIR ELEVATION AT END OF ΔT
					END OF ΔT	AVG. FOR ΔT				
0				112.05	67	34	3	3	3	112.02
1	1	73	6	112.02	60	30	3	3	3	112.02
	1	219	18	112.05	67	64	13	16	16	112.09
2				112.09	77	68	6	15	15	112.09
	1	365	30	112.25	115	96	8	37	37	112.22
3				112.22	108	93	8	22	37	112.22
	1	510	43	112.40	151	130	11	32	69	112.41
4										
	1	656	55	112.70	259	205	17	38	107	112.59
5				112.63	229	190	16	39	108	112.63
	1	802	67	112.90	344	287	24	43	151	112.89
6										
	1	948	79	113.25	526	435	36	43	194	113.12
7				113.12	454	399	33	46	197	113.13
	1	1093	91	113.35	581	518	43	48	245	113.38
8				113.37	592	523	44	47	244	113.38
	1	1239	103	113.60	730	661	55	48	292	113.61
9										
	1	1385	115	113.82	874	802	67	48	349	113.85
10				113.85	894	812	68	47	339	113.85
	1	1296	108	114.10	1066	980	82	26	365	113.98
11				114.00	992	943	79	29	368	113.99
	1	1207	101	113.96	924	959	80	21	389	114.10
12				114.07	1044	1018	85	16	384	114.07
	1	1117	93	114.10	1066	1055	88	5	389	114.10
13										
	1	1028	86	114.10	1066	1066	89	-3	386	114.08
				114.08	1052	1053	88	-2	387	114.08

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Job WINTONBURY DAM
Sheet Number D-9
Date 1-19-1981
By R-S.

TIME (HOURS)	ΔT (HOURS)	AVERAGE INFLOW RATE (CFS)	AVERAGE INFLOW (AC. FT.)	TRIAL RESERVOIR ELEVATION AT END OF ΔT	RATE OF OUTFLOW CFS.		OUTFLOW FOR ΔT AC. FT.	INCREMENTAL STORAGE ΔS AC. FT.	TOTAL STORAGE AC. FT.	RESERVOIR ELEVATION AT END OF ΔT.
					END OF ΔT	AVER- AGE FOR ΔT				
	1	1028	86	114.08	1052	1059	88	-2	387	114.08
14	1	939	78	114.00	992	1022	85	7	380	114.05
15	1	849	71	114.05	1029	1041	87	-9	378	114.04
16	1	760	63	113.98	966	998	83	-18	366	113.98
17	1	671	56	113.92	953	966	81	-17	358	113.94
18	1	581	48	113.84	887	920	77	-20	337	113.84
19	1	492	41	113.73	815	851	71	-23	315	113.73
20	1	403	34	113.50	664	700	58	-24	291	113.61
21	1	313	26	113.48	653	695	58	-24	267	113.48
22	1	224	19	113.34	575	614	51	-25	242	113.36
23	1	134	11	113.22	520	553	46	-27	214	113.22
	1			113.07	509	547	46	-28	186	113.08

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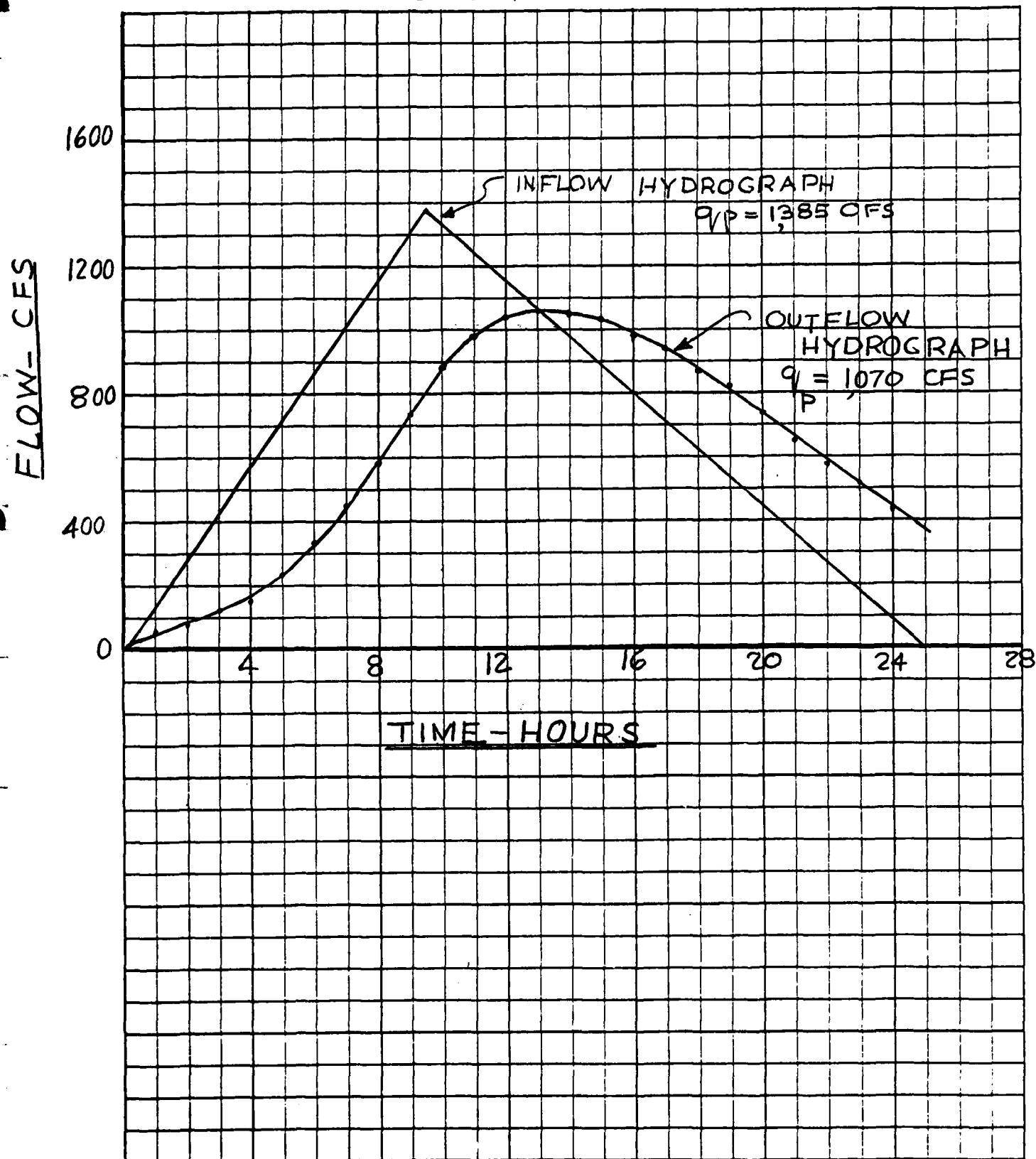
Job WINTONBURY DAM

Sheet Number D-10

Date 1.19.1981

By R. SINGHAL

INFLOW & OUTFLOW HYDROGRAPHS



SINGHAL ASSOCIATES**CONSULTING ENGINEERS****(CIVIL, HYDRAULICS, SANITARY)**

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Job WINTONBURY DAMSheet Number D-11Date 1-19-1981By R. SINGHAL**DAM FAILURE FLOOD ROUTING**

STORAGE CAPACITY AT TOP OF DAM (EL. 116.5)
= 1750 AC. FT.

AS PER CORPS OF ENGINEERS GUIDELINES

$$Q_p = \frac{8}{27} \cdot W_b \cdot \sqrt{g} \cdot y_o^{3/2}$$

WHERE Q_p = DAM BREACH PEAK FAILURE OUTFLOW
IN C.F.S

W_b = BREACH WIDTH = 40% OF DAM LENGTH AT
MID-HEIGHT

y_o = HEIGHT FROM STREAM-BED TO POOL LEVEL AT
FAILURE (114.1)

SUBSTITUTING THE VALUES OF W_b AND y_o AS

(0.4 x 1620') AND 22' RESPECTIVELY

$$Q_p = \frac{8}{27} \times (0.4 \times 1620) \times \sqrt{32.2} \times 19.6^{3/2}$$
$$= 95,000 \text{ C.F.S.}$$

1-19.1981

WINTONBURY DAM

DOWNSTREAM CHANNEL

SCALES

H 1" = 400'

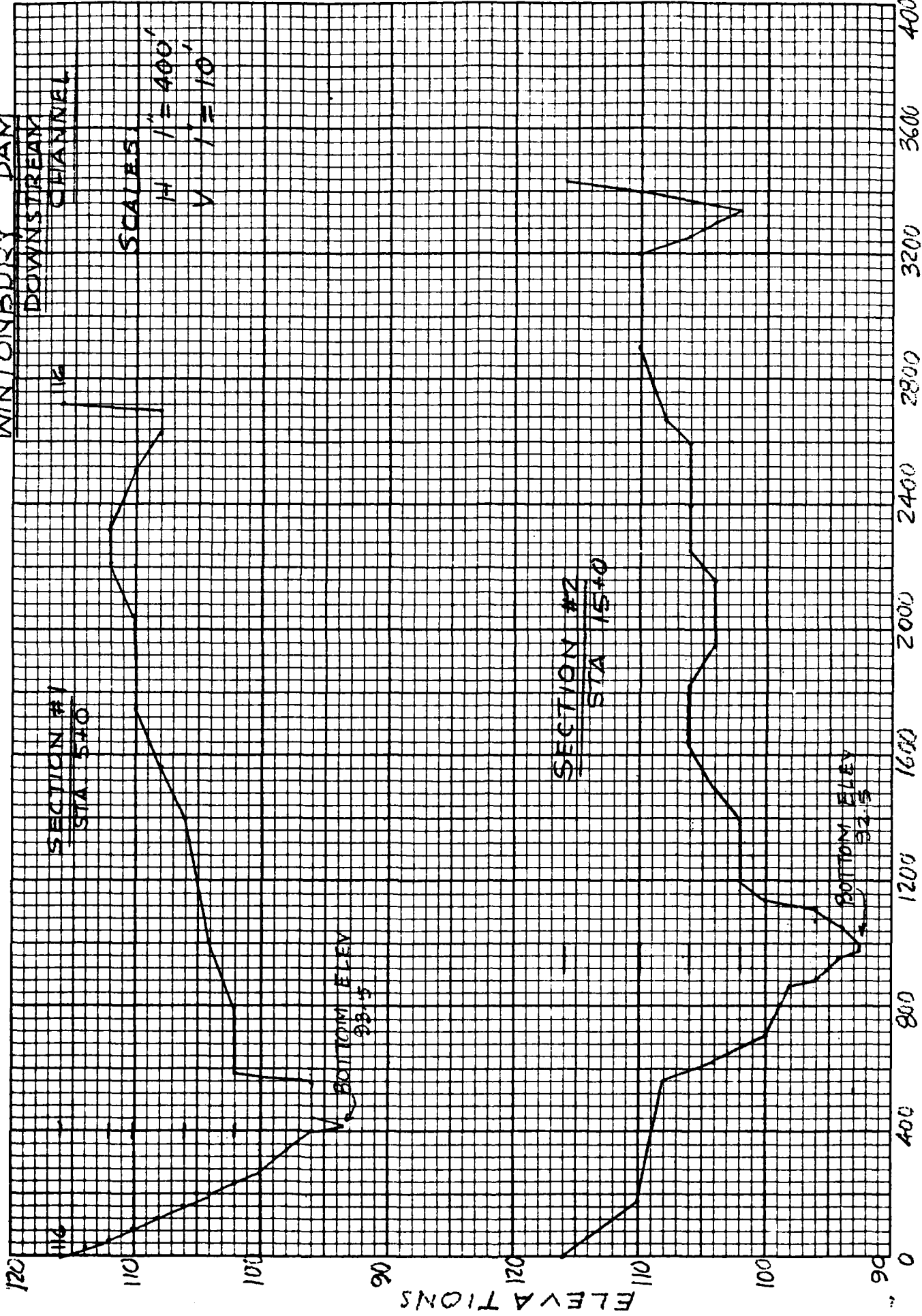
V 1" = 10'

SECTION #1
STA 5+0

SECTION #2
STA 15+0

BOTTOM ELEV
98.5

BOTTOM ELEV
92.5

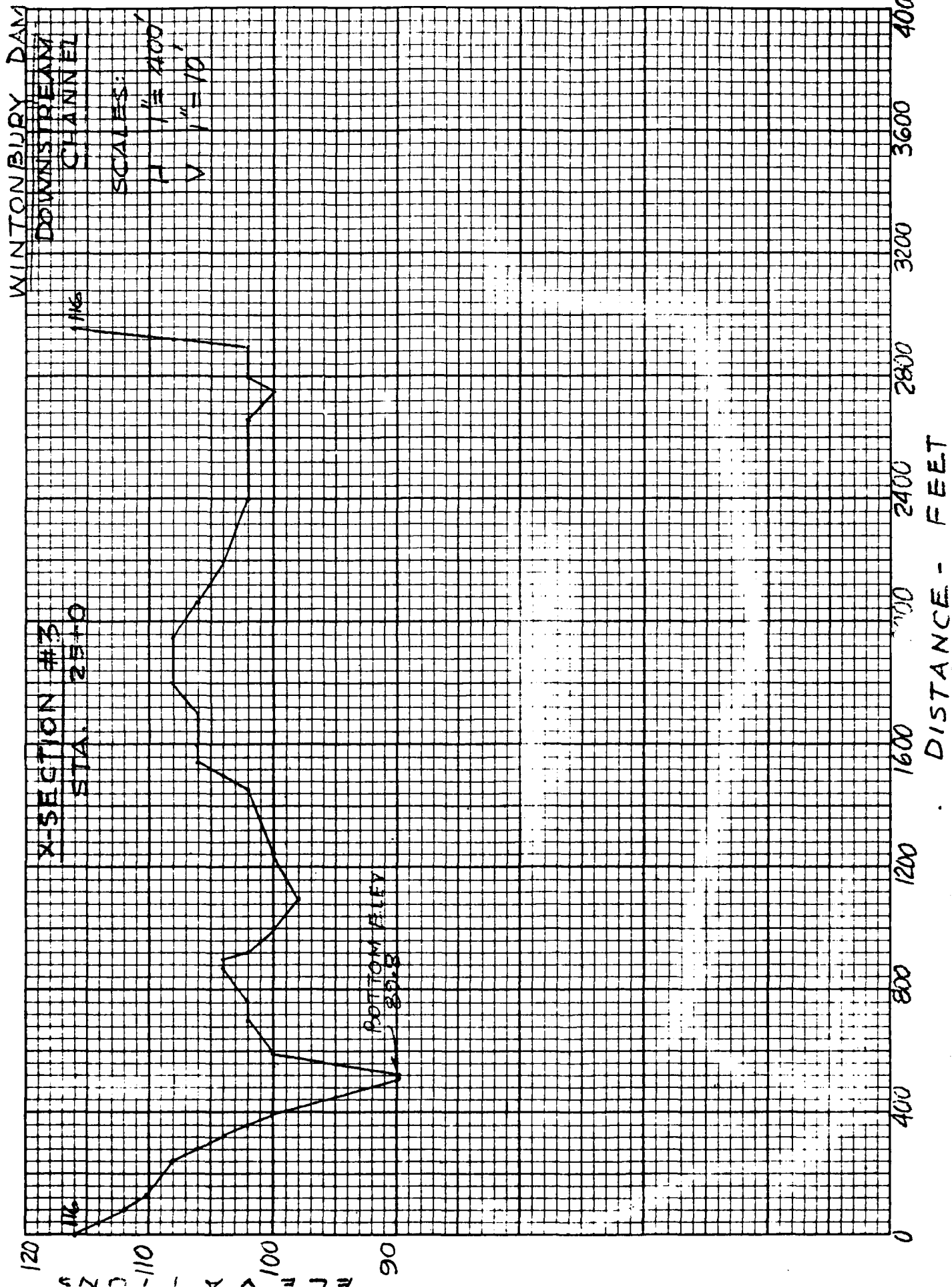


340 DIE GR TAPE
10 X 10 PER INCH

ENE ZGEN
MADE IN U.S.A.

1.19.1981

SHEET # D-13



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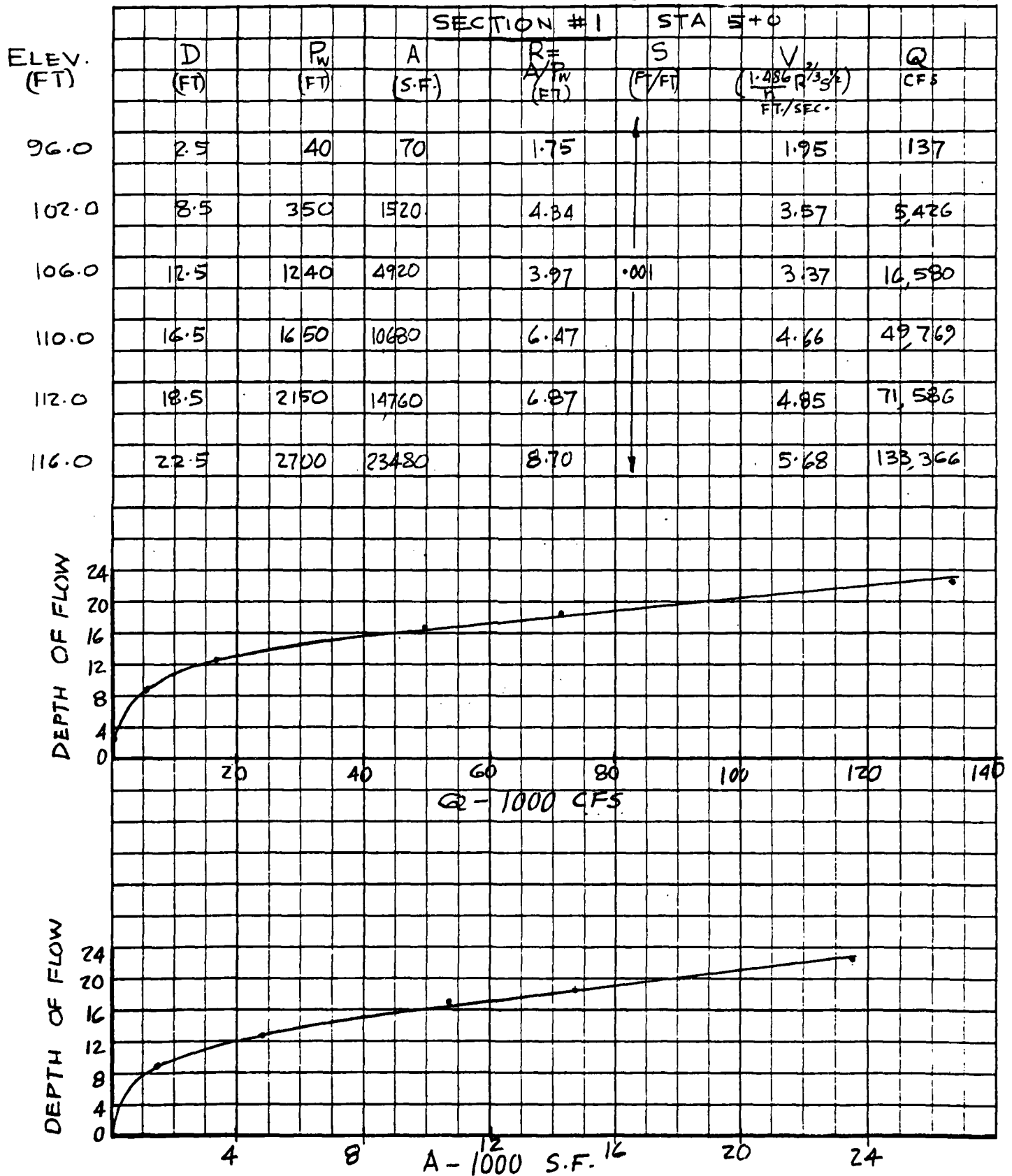
Job WINTONBURY DAM

Sheet Number D-14

Date 1-20-1981

By R.S.

DAM FAILURE (DOWNSTREAM FLOODROUTING)



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Job WINTONBURY DAM
 Sheet Number D-15
 Date 1.20.1981
 By R.S.

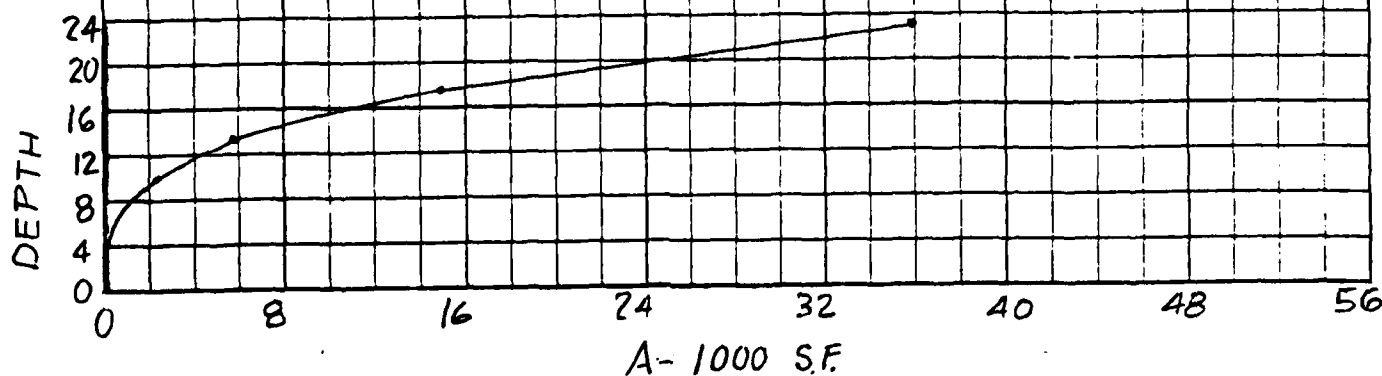
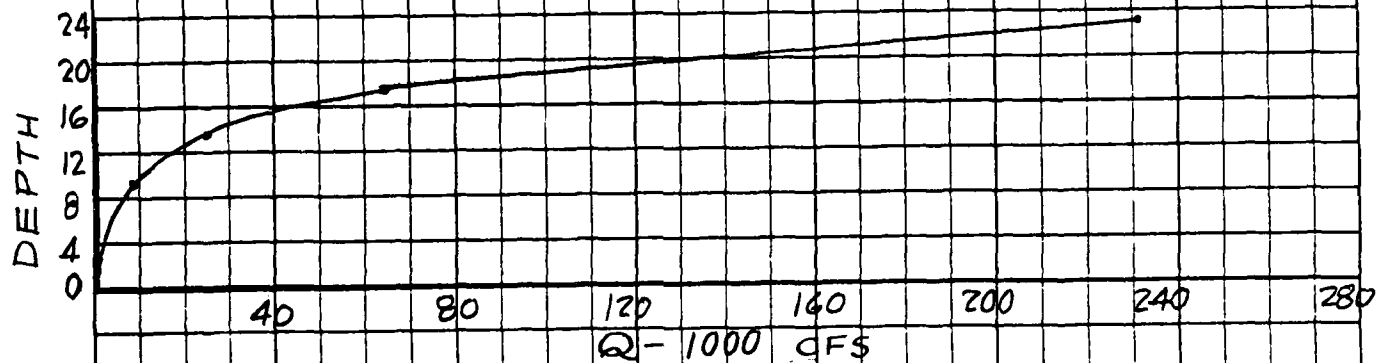
DAM FAILURE (DOWNSTREAM FLOOD ROUTING)

SECTION #2 - STA 15+0

ELEV.
(FT)

95.0
102.0
106.0
110.0
116.0

D (FT.)	P _w (FT)	A (S.F.)	R = A/P _w (FT)	S (FT/FT)	V ($\frac{1.486 Q^{.43}}{A^{.86} S^{.5}}$) (FT/SEC.)	Q (CFS)
2.5	150	200	1.4		17	340
9.5	525	2440	4.65		3.74	9,126
13.5	1050	5880	5.60	.001	4.24	24,931
17.5	2720	15280	5.62		4.25	64,940
23.5	3420	35880	10.49		6.44	231,067



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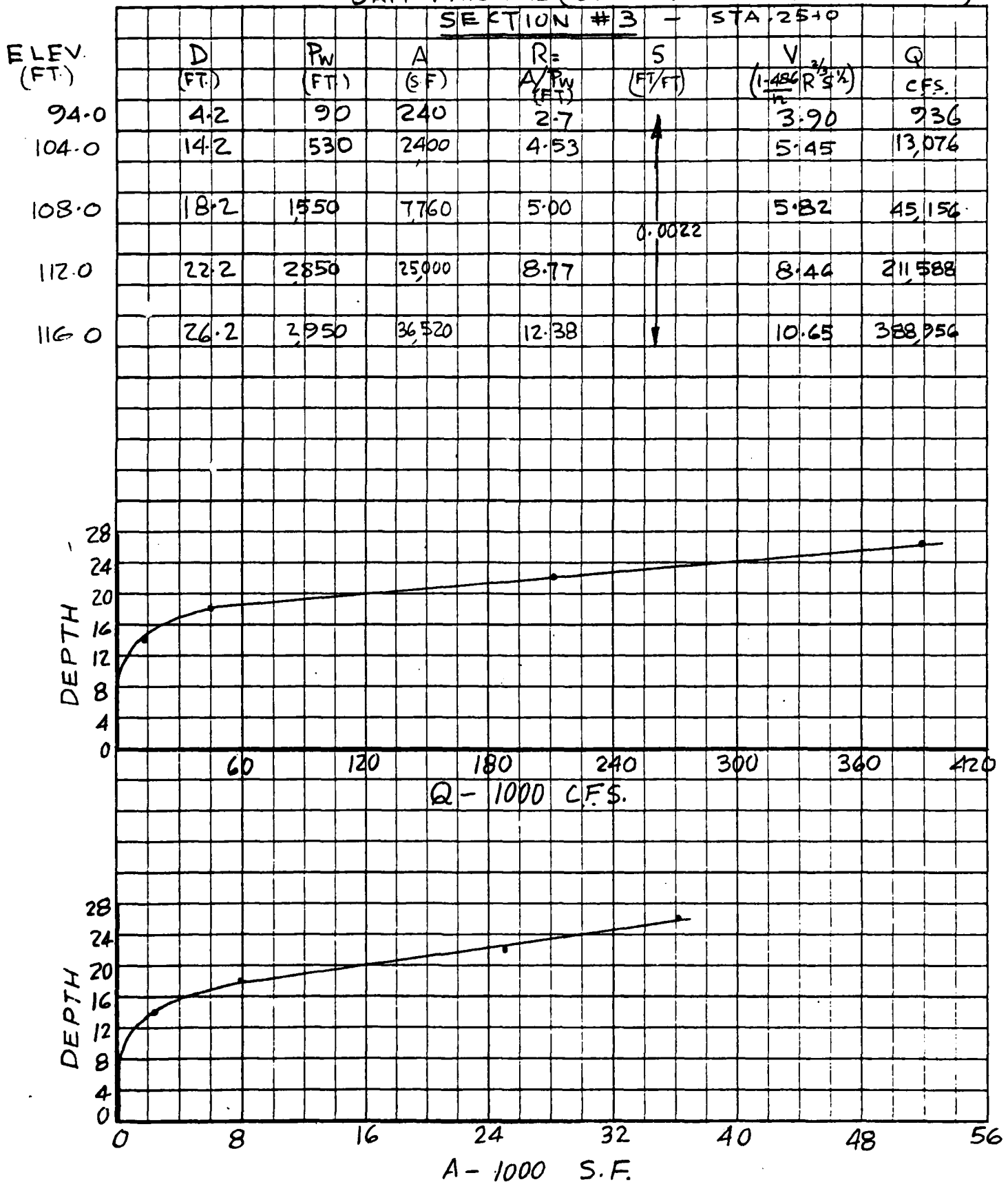
Job WINTONBURY DAM

Sheet Number D-16

Date 1-20-1981

By R.S.

DAM FAILURE (DOWNSTREAM FLOOD ROUTING)



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Job WINTONBURY DAMSheet Number D-17Date 3.8.1981By RS./GHDAM FAILURE FLOOD ROUTINGX-SECTION #1 (STA. 5+0)FOR $Q_{P1} = 95,000$ CFS $H_1 = 20.0'$ AND $A_1 = 18040$ S.F.

REACH LENGTH = 500'

STORAGE = $18040 \times 500 / 43560 = 207$ AC. FT. $Q_{P2} = Q_{P1} \left(1 - \frac{207}{1240}\right) = 95000 \times 0.833 = 79135$ CFS $H_2 = 19.0'$ AND $A_2 = 15820$ S.F.STORAGE = $15820 \times 500 / 43560 = 182$ AC. FT.AVG. STORAGE = $\frac{1}{2}(182 + 207) = 195$ AC. FT. $Q_{P3} = Q_{P1} \left(1 - \frac{195}{1240}\right) = 95000 \times 0.843 = 80,000$ CFS $H_3 = 19.0'$ ROUTED FLOW = 80,000 CFS.POST- FAILURE FLOOD ELEVATION = $93.5 + 19.0$
= 112.5

PRE- FAILURE FLOW = 1070 CFS.

FLOW DEPTH = 3.5'

AND FLOOD ELEVATION = $93.5 + 3.5$
= 97.0RISE IN FLOOD STAGE = $112.5 - 97.0$
= 15.5'

NUMBER OF HOUSES FLOODED:

BEFORE FAILURE = 0

AFTER FAILURE = 0

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Job WINTONBURY DAMSheet Number D-18Date 3.8.1981By R.S./G.F.DAM FAILURE FLOOD ROUTING
X- SECTION #2 (STA 15+0)

FOR $Q_{p1} = 80,000$ CFS , $H_1 = 18.0'$ AND $A_1 = 17,130$ S.F.
REACH LENGTH = 1000'

$$\text{STORAGE} = 17,130 \times 1000 / 43560 = 393 \text{ AC. FT.}$$

$$Q_{p2} = Q_{p1} \left(1 - \frac{393}{1240}\right) = 80,000 \times 0.683 = 54,640 \text{ CFS}$$

$$H_2 = 16.5' \quad \text{AND} \quad A_2 = 12850 \text{ S.F.}$$

$$\text{STORAGE} = 12850 \times 1000 / 43560 = 295 \text{ AC. FT.}$$

$$\text{AVG. STORAGE} = \frac{1}{2} (295 + 393) = 344 \text{ AC. FT.}$$

$$Q_{p3} = Q_{p1} \left(1 - \frac{344}{1240}\right) = 80,000 \times 0.723 = 57,800 \text{ CFS}$$

$$H_3 = 16.8' \quad \text{AND} \quad A_3 = 13600$$

$$\text{STORAGE} = 13600 \times 1000 / 43560 = 312 \text{ AC. FT.}$$

$$\text{AVG. STORAGE} = \frac{1}{2} (312 + 344) = 328 \text{ AC. FT.}$$

$$Q_{p4} = Q_{p1} \left(1 - \frac{328}{1240}\right) = 80,000 \times 0.735 = 58,800 \text{ CFS}$$

$$\text{AND } H_4 = 16.9' \quad \text{SAY } 17.0'$$

$$\begin{aligned} \text{ROUTED FLOW} &= 59,000 \text{ CFS } \pm \\ \text{POST-FAILURE FLOOD ELEVATION} &= 92.5 + 17.0 \\ &= \underline{109.5} \end{aligned}$$

$$\text{PRE-FAILURE FLOW} = 1070 \text{ CFS}$$

$$\text{FLOW DEPTH} = 3.0'$$

$$\text{AND FLOOD ELEVATION} = 92.5 + 3 = \underline{95.5}$$

$$\text{RISE IN FLOOD STAGE} = 109.5 - 95.5 = \underline{14.0'}$$

NUMBER OF HOUSES FLOODED:

$$\text{BEFORE FAILURE} = 0$$

$$\text{AFTER FAILURE} = 14$$

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Job WINTONBURY DAMSheet Number D-19Date 3.8.1981By R.S./GHDAM FAILURE FLOOD ROUTING
X- SECTION #3 (STA. 25+0)FOR $Q_{p1} = 59000$ CFS. $H_1 = 18.5'$ AND $A_1 = 9210$ S.F.
REACH LENGTH = 1000'STORAGE = $1000 \times 9210 / 43560 = 211$ AC-FT.

$$Q_{p2} = Q_{p1} \left(1 - \frac{211}{1240}\right) = 59000 \times 0.83 = 49000 \text{ CFS.}$$

$$H_2 = 18.4' \quad \text{AND} \quad A_2 = 8175 \text{ S.F.}$$

$$\text{STORAGE} = 1000 \times 8175 / 43560 = 188 \text{ AC-FT.}$$

$$\text{AVG. STORAGE} = \frac{1}{2} (188 + 211) = 200 \text{ AC-FT}$$

$$Q_{p3} = Q_{p1} \left(1 - \frac{200}{1240}\right) = 59000 \times 0.84 = 49500 \text{ CFS}$$

AND $H_3 = 18.2'$

$$\text{ROUTED FLOW} = \underline{49,500 \text{ CFS}}$$

$$\text{POST-FAILURE FLOOD ELEVATION} = 89.8 + 18.2 = \underline{108.0}$$

$$\text{PRE-FAILURE FLOW} = 1070 \text{ CFS}$$

$$\text{FLOW DEPTH} = 4.2'$$

$$\text{AND FLOOD ELEVATION} = 89.8 + 4.2' = 94.0$$

$$\begin{aligned} \text{RISE IN FLOOD STAGE} &= 108.0 - 94.0 \\ &= \underline{14.0'} \end{aligned}$$

NUMBER OF HOUSES FLOODED:

$$\text{BEFORE FAILURE} = 0$$

$$\text{AFTER FAILURE} = 23$$

APPENDIX E

INFORMATION AS CONTAINED IN
THE NATIONAL INVENTORY OF DAMS



INVENTORY OF DAMS IN THE UNITED STATES

IDENTITY NUMBER	STATE	COUNTY	CORPS DIST.	NAME	LATITUDE (NORTH)	LONGITUDE (WEST)	REPORT DATE DAY MO YR
CT 492	CT	005	01	WINTONBURY DAM	4150.6	7243.5	13 FEB 81

POPULAR NAME	NAME OF IMPONEMENT
	WINTONBURY RESERVOIR

REGION BASIN	RIVER OR STREAM	NEAREST DOWNSTREAM CITY-TOWN-VILLAGE	DIST FROM DAM (MI.)	POPULATION
0104	SEAHAM'S BROOK	HLOOMFIELD	0	18600

TYPE OF DAM	YEAR COMPLETED	PURPOSES	STRUCTURAL HEIGHT (FT.)	HYDRAULIC HEAD (FT.)	IMPONING CAPACITIES (ACRES-FT.)
WE	1963	C	25	23	1750

DIST OWN FED R PRV/FED SCS A VER/DATE
NED N N N B

REMARKS

D/S HAS	SPILLWAY TYPE	MAXIMUM DISCHARGE (CFS)	VOLUME OF DAM (CY)	POWER CAPACITY INSTALLED (KW)	PROPOSED (KW)	NAVIGATION LOCKS
1	1625	110	47000			NO

OWNER	ENGINEERING BY	CONSTRUCTION BY
STATE OF CT DEP	USDA SCS	KOLLA CONSTRUCTION

DESIGN	CONSTRUCTION	OPERATION	MAINTENANCE
NONE	NONE	NONE	NONE

INSPECTION BY	INSPECTION DATE DAY MO YR	AUTHORITY FOR INSPECTION
GUTHRIE & O'NEILL INC	15 DEC 80	PL92-367

REMARKS